DOCUMENT RESUME

ED 396 788 JC 960 415

TITLE An Analysis of Agriculture and Horticulture Programs at Illinois Public Community Colleges. Accountability Report.
INSTITUTION Illinois Community Coll. Board, Springfield.
PUB DATE Jun 96
NOTE 60p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Accountability; *Agricultural Education; Articulation (Education); *Community Colleges; *Cost Effectiveness; Employment Statistics; *Horticulture; *Labor Needs; Program Costs; Program Effectiveness; Program Evaluation; Public Colleges; Two Year Colleges; Vocational Followup
IDENTIFIERS *Illinois Community College System

ABSTRACT

Prepared as part of a state program review, this report presents results from a review undertaken of all agriculture and horticulture programs at Illinois public community colleges for fiscal year 1995. The first part focuses on the four agricultural programs reviewed: Agricultural Business and Management; Agricultural Production, Workers, and Managers; Agricultural Food Production & Processing, Operations, and Management; and Agricultural Supplies and Related Services. For each program, the report describes outcomes related to the need for the program, including data on enrollment, completions, job placement of graduates, and labor market demand for graduates; program cost-effectiveness; and program quality, including data on teaching and learning, partnerships with local businesses, articulation, and student activities. The second part discusses the eight horticulture programs reviewed (i.e., General, Arboriculture, Ornamental Horticulture, Greenhouse Operation and Management, Landscaping, Nursery Operation and Management, Turf Management, and Parks and Grounds Management), providing general data on overall program need, cost-effectiveness, and quality. Recommendations are included for both Agriculture and Horticulture programs. Contains 17 references. Appendixes include lists of Agriculture and Horticulture programs by college, 30 tables on enrollment and program completion, program and course descriptions, and a list of the agricultural review panel participants. (TGI)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 396 788

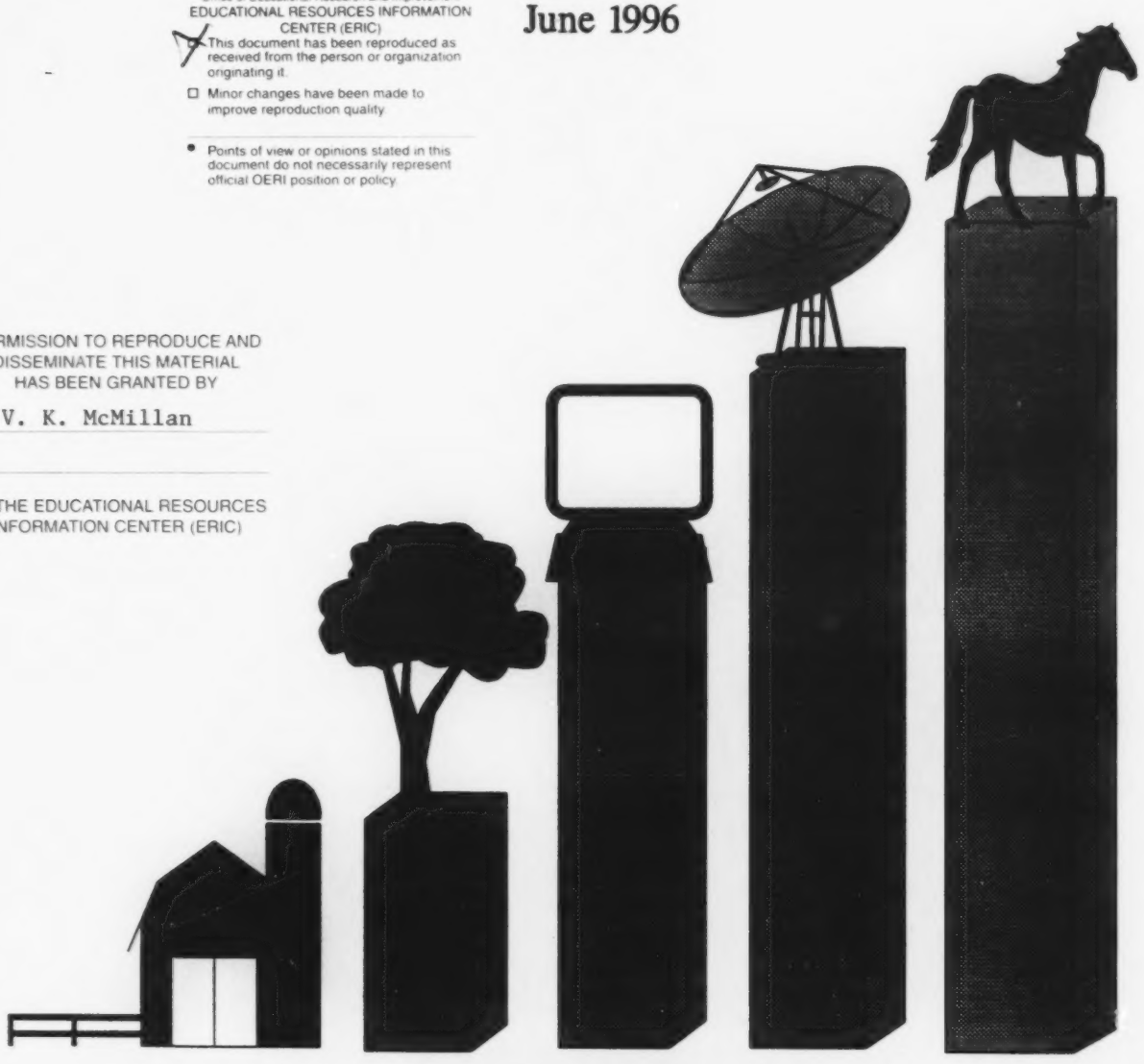
ACCOUNTABILITY REPORT

An Analysis of Agriculture and Horticulture Programs at Illinois Public Community Colleges

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

June 1996

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
V. K. McMillan
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)



Illinois Community College Board
509 South Sixth Street, Suite 400
Springfield, Illinois 62701-1874
Telephone: (217) 785-0123
TDD: (217) 782-5645

JC 960415

BEST COPY AVAILABLE

Printed by Authority of the State of Illinois

Illinois Community College Board

ACCOUNTABILITY REPORT: AN ANALYSIS OF AGRICULTURE AND HORTICULTURE PROGRAMS AT ILLINOIS PUBLIC COMMUNITY COLLEGES

June 1996

TABLE OF CONTENTS

	Page
Agriculture Programs in Community Colleges	2
Agriculture Business and Management (CIP 010101)	3
Agriculture Production Workers and Managers (CIP 0103)	8
Agriculture Food Production and Processing, Operations and Management (CIP 010401)	11
Agriculture Supplies and Related Services (CIP 0105)	12
Ag Transfer Program	14
Recommendations for Agriculture Programs	15
Horticulture Programs in Community Colleges	17
Recommendations for Horticulture Programs	24
Conclusion	24
Bibliography	27
Appendix	29

AN ANALYSIS OF AGRICULTURE AND HORTICULTURE PROGRAMS IN ILLINOIS PUBLIC COMMUNITY COLLEGES

When students indicate plans to pursue an agriculturally related career, employment in crop or livestock production is probably the image which comes to mind for many people in Illinois. Farmland covers nearly three-fourths of the state and Illinois ranks second in the nation in crop production and eleventh in livestock business. Based on local demand, a core group of community colleges continue to offer technologically advanced training in agriculture production. As farms have come to rely increasingly on technology to maintain profitability, these programs have taken on an increasing emphasis on developing scientific, technological, and management expertise. Entrepreneurial skills have emerged as keys to success in these vocations (*HORIZONS* 1996, pp. 294-295).

Simultaneously, colleges are also expanding their efforts to provide training in ag-related programs. Responding to business and industry, community colleges have developed programs in agri-business and marketing, food production and processing, agriculture services, and equine studies. As urbanization flows over previously rural landscapes, some institutions have branched into horticulture where students learn skills in floral design, nursery operation, and golf course greens management. Technology, global competition for products, and environmental concerns have dramatically altered educational preparation for agriculture and horticulture careers. Students in agriculture and horticulture programs can be found learning about satellite technology for efficient crop management and using computers to design landscapes. In Illinois where demand for agriculture and horticultural services is growing, community colleges are challenged to stay abreast of the pace of change. In the future, agriculture and horticulture education may include programs which focus on production of higher value cash crops, adapting plants for use as liquid fuel, and establishing rooftop gardens and edible landscapes. Numerous challenges offer continuing and varied opportunities for community colleges to expand educational opportunities for both Illinois citizens and industries.

Statewide, agriculture and horticulture programs are relatively small programs at Illinois community colleges, comprising only 1.3 percent of all occupational enrollments and 2.5 percent of occupational completions for fiscal year 1995 (ICCB *Data and Characteristics of the Illinois Public Community College System*, June 1996). Yet, agriculture and ag-related businesses have both historically been and are currently important to the state's economy. The following information confirms the importance of agriculture and ag-related business to the state:

> Illinois ranks among the leading states in farm income. Farmland covers about three-fourths of Illinois...corn is grown on 45 percent of Illinois farmland... Soybeans are the second most valuable farm product in Illinois....Hay and wheat are also important crops....Hogs are the most valuable type of livestock product in Illinois. Only Iowa raises more hogs....Other leading livestock products in Illinois are beef, cattle and milk....
>
> Food processing is the leading manufacturing activity in Illinois in terms of the gross state product. Several of the nations largest food-processing companies are headquartered in Chicago...Plants in Decatur process huge quantities of corn and soybeans. (pp. 69-70, "Illinois," The World Book Encyclopedia, 1994)

Chicago's Board of Trade is also among the leading exchanges in the world. Technological, environmental, and economic forces are impacting the agricultural industry. Hence, an examination of community college programs in this area is warranted.

Agriculture and horticulture curricula received a thorough review by all institutions in the community college system during fiscal year 1995. This report highlights results of program reviews conducted by community colleges on programs in both areas, demonstrates ways in which institutions strive to stay responsive to the needs of students and businesses within their communities, and provides recommendations based on a statewide analysis.

In 1983, the Illinois Community College Board established minimum standards for a systematic and collegewide program review process which remains the primary accountability effort of colleges to determine the viability of programs. This process ensures that all instructional and student and academic support programs are reviewed once every five years. Community colleges, in their reviews, examine programs according to three basic criteria: need for the program, cost-effectiveness, and quality. College assessment of these criteria culminates in a report on the status of each program. The merger of the program review process and the Priorities, Quality, and Productivity (PQP) initiative in 1993 resulted in improved linkages between college program reviews and strategic planning.

Agricultural Programs in Community Colleges

Programs scheduled for review for fiscal year 1995 included the following*:

Agricultural Business and Management	CIP 0101
Agricultural Production, Workers and Managers	CIP 0103
Agricultural Production Workers and Managers, General	
Agricultural Animal Husbandry and Production Management	
Crop Production Operations and Management	
Agricultural Food Production & Processing, Operations and Management	CIP 0104
Agricultural Supplies and Related Services	CIP 0105
Equestrian/Equine Studies, Horse Management and Training	

* Agriculture Mechanics is scheduled for review in fiscal year 1996.

Based on local need, less than half of Illinois community colleges offer agricultural programs (N=21/49). Some colleges offer curricula in only one of the above categories; others offer a host of diverse programs. Students may pursue Associate in Applied Science (AAS) degrees which require completion of a minimum of 60 semester credit hours or certificates of a maximum of 50 semester credits, including shorter, basic certificates and longer, more advanced certificates.

A key to successful programs appears to be to find an appropriate niche within the community based on the predominant products and services for which there is a market. For example, a thriving swine production program is located at John Wood Community College in Quincy, in the west central part of the state, where hog and pig operations are primarily concentrated. Black Hawk College in Kewanee has a highly successful equine management program and the

popularity of horse management and training is prompting several institutions to consider similar offerings. A food processing program is located at Richland Community College in Decatur where large plants (Archer Daniels Midland and A.E. Staley) process huge quantities of corn and soybeans. Table A-1 in the Appendix shows the distribution of agricultural programs throughout the community college system.

Results from Community College Program Reviews of Agriculture Programs. The results of community college reviews are shown in the table below:

Fiscal Year 1995 Program Review Outcomes for All Agricultural Areas					
Program and CIP	# of curricula to receive minor improvements	# of curricula to be significantly modified	# of curricula to be reviewed again in FY 1996	# of curricula to be inactivated or withdrawn	Total
Ag Bus & Mgt CIP 0101	18	0	1	5	24
Ag Production CIP 0103	21	2	2	4	29
Ag Processing, CIP 0104	1	1	0	0	2
Ag Sup & Serv CIP 0105	2	0	1	1	4
Total	42	3	4	10	59

Agricultural Business and Management (CIP 010101)

Fifteen community colleges currently offer curricula to prepare persons to enter and advance in the field of Agricultural Business and Management. Such programs lead to mid-management employment opportunities in off-farm businesses in sales, services, finance, and engineering. Workers may be fertilizer or seed dealers, grain elevator operators, managers in agriculture cooperatives, educators, or bank officers. Persons seeking to become farm managers also may pursue programs in this category. Results from community college program reviews of agriculture business and management programs, as shown in the table below, indicate that three-quarters of the curricula were found to be viable and needing only minor improvements. However, five curricula at three colleges will be withdrawn or inactivated due to low enrollments, difficulty in recruiting instructors, lack of employer demand, and preference for articulated agriculture coursework over associate in applied science degree options. These colleges will be able to reallocate scarce resources to programs of higher priority. One program is scheduled for additional monitoring and review.

Fiscal Year 1995 Program Review Outcomes for Agriculture Business, CIP 0101					
Program and CIP	# of curricula to receive minor improvements	# of curricula to be significantly modified	# of curricula to be reviewed again in FY 1996	# of curricula to be inactivated or withdrawn	Total
Ag Bus & Mgt CIP 0101	18	0	1	5	24

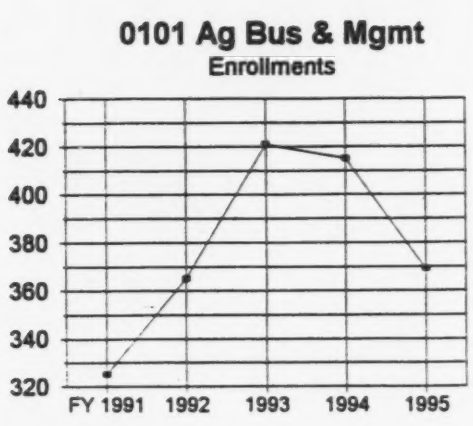
Program Need. To address program need, colleges analyzed findings on enrollments, completions, and job placement rates of graduates. A statewide analysis of enrollment, completion and follow-up data along with specific information from individual college reviews follows.

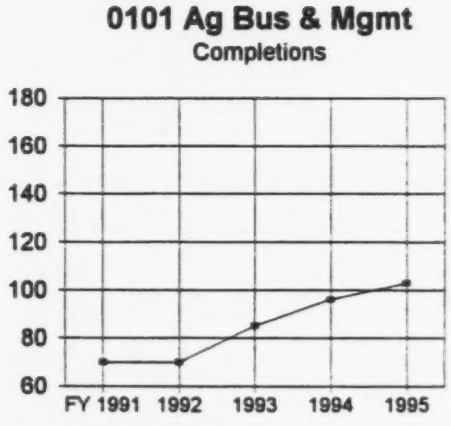
Enrollments in Agricultural Business and Management Programs. Statewide averages and enrollment information by specific college can be found in the Appendix, Table B-1. This table provides the percent of change from fiscal year 1991 to 1995 and the percent of change from fiscal years 1994 to 1995. The statewide five-year trend indicates enrollments in Agricultural Business and Management peaked in fiscal year 1993 at 421 students and have since declined to near fiscal year 1992 levels (369 students). This translates to a five-year net increase of 13.5 percent with a corresponding increase in credit hours generated of 12.0 percent. During this same five-year period, enrollments in *all* community college occupational programs dropped 4.9 percent. Agricultural Business and Management enrollments declined 11.1 percent between fiscal year 1994 and fiscal year 1995 in comparison to enrollment decreases of 1.8 percent across *all* occupational programs.

Two of the programs which were withdrawn had fewer than ten students officially enrolled (Kankakee Community College and Richland Community College). There are three low-enrollment curricula which are still active in this program area. Despite low enrollments, officials recommend program continuation. Reasons given include the fact that numerous required courses are contained in other programs which are not plagued by low enrollments. Two colleges (Kishwaukee College and Shawnee Community College) indicated that no additional faculty are needed to teach these courses so there would be little cost benefit to eliminating the program. Highland Community College indicates that agriculture remains a primary industry in its district. Fiscal year 1995 program enrollment figures also do not include over 500 credits generated by students taking vocational skills coursework.

Completions in Agricultural Business and Management Programs. From 1991 to 1995, the number of completions in this specific area grew 47.1 percent (N=33) compared to a 15.0 percent increase for all agricultural programs and a similar increase in completions (11.2 percent) for all occupational programs (ICCB *Data and Characteristics of the Illinois Public Community College System*, June 1996). However, the rate of change from fiscal years 1994 to 1995 was an 11.1 percent decline (N=46) (see Appendix, Table C-1). In fiscal year 1995, 96 degrees, six advanced certificates, and one basic certificate were awarded.

BEST COPY AVAILABLE





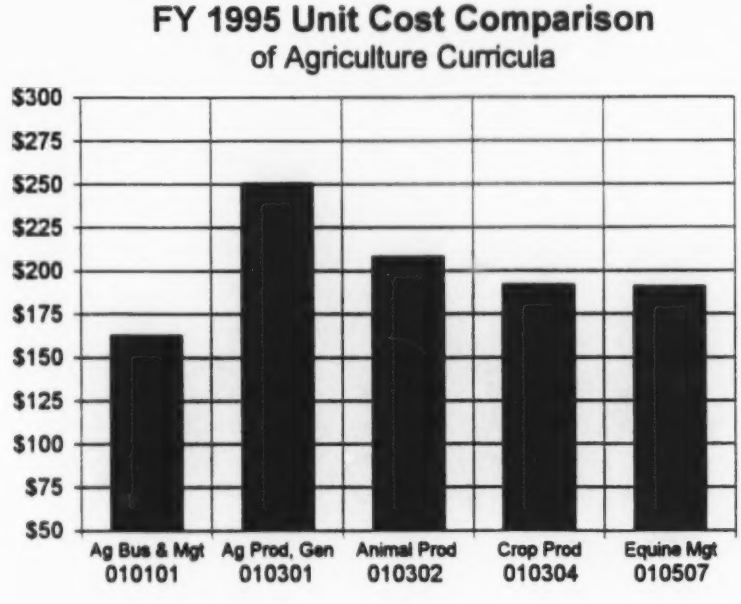
Job Placement of Agricultural Business and Management Program Graduates. Nearly two-thirds of all fiscal year 1993 agriculture business and management graduates (50 of 81=61.7 percent) responded to the ICCB statewide follow-up survey conducted in fiscal year 1994. Ninety-eight percent of respondents were employed or pursuing additional education or both (1994 *Follow-Up Survey*, Table A-1, p. 12). Seventy-six percent were employed and only 4.0 percent were unemployed and seeking work (Table A-2, p. 13). Over one-third of the graduates (36.7 percent) were enrolled in a related program (Table A-4, p. 15). Of those who were employed, 91.4 percent were working in a job related to their training (Table A-5, p. 16). A sizeable portion of respondents (41.2 percent) had their current job prior to being admitted to their degree program compared to 35.3 percent who began their job during enrollment, and 23.5 percent who obtained their position after completing program requirements (Table A-6, p. 17). Over three-quarters (77.8 percent) were employed in the district in which they received their training. Approximately 14 percent were employed out-of-district but in Illinois, and only 8.3 percent were employed out-of-state. The average salary of graduate respondents was $7.79 per hour or approximately $16,200 per year. John Wood Community College reports that each graduate of its Agricultural Business and Management Program had a minimum of three solid job offers, and some students were hired prior to completing program requirements.

Labor Market Demand: Balance Growing Opportunities Projected

Labor Market Demand for Persons in Agricultural Business and Management. The demand for agricultural managers is difficult to assess, in part, because the need for their expertise may be found in numerous industries besides agriculture. For example, much of Illinois farmland is held by banks, and finance officers with backgrounds in agriculture are key decision-makers. In addition, the agriculture/farm industry has only recently begun to participate in routine occupational supply and demand data collection. Collection of off-farm industry supply and demand data has only occurred in the past three years, compared to approximately 40 years of data collection for manufacturing. Illinois, because agriculture is one of the largest industries in the state, is ahead of other states in collecting agriculture industry information. Mixed signals are being given regarding employment opportunities in this career area. Nationwide, the demand for farm managers is perceived as weak. A 17 percent decline is forecast between the years 1992 and 2005 (*Occupational Outlook Quarterly*, p. 36, Spring, 1994). However, data from the Substate Employment Projections System (Economic Information and Analysis Division, Illinois

Department of Employment Security), which are soon to be released by the Illinois Occupational Information Coordinating Committee, show a brighter perspective. The forecast for "Farm Managers" in all industries is predicted to increase 25 percent during this 13 year period with similar rates projected for "Sales Managers and Supervisors."

Cost-Effectiveness. Of all the program areas in agriculture, curricula in Agricultural Business and Management have the lowest unit cost ($162.80) and the unit cost most closely aligned with the unit cost for *all* occupational programs ($167.86). The graph below shows statewide average cost comparisons among agricultural programs. The unit cost for Agricultural Business and Management is lower now than it was in fiscal year 1991 ($182.46). One explanation for this fact is that credit hours generated for this CIP code increased 12 percent during this time period. Notable differences between 1991 and 1995 cost data are in the areas of salaries, which were 31 percent higher in 1991, and equipment, which was 40 percent lower in that year.



Community colleges utilize various cost-cutting measures to make programs more effective. For example, Danville Area Community College has assigned one agriculture instructor to the Math/Sciences Division as a Science instructor and another to the Information Systems Department as a computer instructor for the majority of their time. Aware of the growing number of transfer students, some colleges have aligned their AAS and transfer curricula, thereby improving program efficiency and reducing operating costs. As northern Illinois' rural agricultural land has been transformed to more urbanized communities, several community colleges consolidated their programs with Kishwaukee College, which chose to retain its program because of the DeKalb Genetics and Seed Company in its district. Now students from Elgin Community College, McHenry County College, Rock Valley College, Sauk Valley Community College, and Waubonsee Community College, as well as Kishwaukee College, benefit by having a comprehensive regional program in this area. Students receive the training they desire while participating institutions operate in a cost-effective, efficient manner. To achieve further cost

savings, Kishwaukee College reports efforts to more effectively utilize faculty expertise. For example, marketing faculty instruct both business and agricultural students, and economics faculty teach students enrolled in both economics and agricultural economics. Student assignments reflect particular program emphases.

Quality. Program review reports describe many quality features of Agricultural Business and Management programs. These include internships that provide hands-on experiences for students and facilitate permanent job placement, computerized instruction that prepares students for using technology in the workplace whether it be on the farm or in the office, and improved articulation to enable students to transfer from tech prep curricula to certificate and associate degree programs to baccalaureate degree programs. Following are other specific examples of quality enhancement initiatives occurring at community colleges.

Teaching/Learning. Highland Community College is reassessing its entire agriculture curriculum and plans to incorporate both seminar or short duration course offerings and additional hands-on experiences to better meet student needs. Danville Area Community College is developing occupational competencies to strengthen curricula, and Spoon River College is updating course syllabi. Shawnee College identified the need to add more audio-visual materials and periodicals to keep students apprised of changes in the field of agriculture. At Kaskaskia College, students are required to take computer courses that stress word processing, database package usage, and spreadsheet applications. Students are electronically linked with the Chicago Board of Trade for selected projects. Lake Land College and Parkland College are also increasing the amount of computerized instruction. At Parkland, software packages to support instruction in agricultural economics, farm management, grain marketing, and soil fertility are being integrated into the instructional process. The college's program utilizes community resources, including guest speakers, field trips, and demonstrations by professionals. Parkland's report further described plans to hire an additional full-time faculty member which will allow current faculty time to acquire knowledge and skills to design and offer additional continuing education courses/workshops for district residents. Parkland also plans to explore potential programs in agricultural research and agriculture biotechnology. Lincoln Land Community College reports high levels of retention in its program and will add a certificate option in fertilizer applications as a result of input from its advisory committee. Agriculture faculty at Joliet Junior College have an aggressive placement program with 100 percent of all recent graduates placed in jobs within six months.

Partnerships. Partnerships with local businesses and educational institutions provide numerous benefits, including recruitment and placement opportunities, worksite experiences, input from industry leaders, and supplemental funding for projects and programs. For example, Wabash Valley College's area Farm Bureau donates data subscription services to the college's program. Illinois Central College is considering becoming a regional Agriculture Business Center to better serve its community. To strengthen the linkage between coursework and the workplace, Illinois Central College provides students with a fall and spring internship for a minimum of 640 hours of supervised employment experience. John Wood Community College's (JWCC) program has a 24-member advisory council and the largest number of scholarship offerings of any department in the college. JWCC has a unique cooperative relationship with the University of Illinois' (U of I) Orr Research and Demonstration Agronomy and Animal Science Center. The Center is the only education effort in the U.S. which directly combines Land Grant agriculture research

BEST COPY AVAILABLE

and community college agriculture education. The U of I maintains over 3,000 agronomy research plots on the Orr Research Center where the JWCC Agricultural Education Center is located. Adjacent to the Center is a 191 acre Beef Research Center which normally has 200-plus cattle for research and education.

Articulation. Many community colleges work closely with their counterparts at local secondary schools and senior institutions to facilitate the transfer process and help students reach their goals. Highland Community College reports that area high schools have seen increasing levels of interest in agriculture programs. Both Highland and John Wood Community College described plans to further improve high school/community college articulation. Kaskaskia College is developing a tech prep program in agriculture. Danville Area Community College has facilitated transfer to university programs by developing similar program requirements for AAS and transfer programs.

Student Activities. Several institutions reported on activities which aid recruitment and retention and provide educational experiences outside the classroom. Danville Area Community College has an active Ag Club which raises money for scholarships and to attend National Future Farmers of America Organization (NFFAO) activities. NFFAO exists to promote leadership, character development, responsible citizenship, and to supplement training opportunities for students preparing for careers in farming and agribusiness. Rend Lake College plans to develop a student organization at the college level. John Wood Community College students achieved national recognition by winning the Agriculture Club Quiz Bowl in fiscal year 1992.

Agricultural Production Workers and Managers (CIP 0103)

Programs assigned to this category are those which train students in all phases of farming and ranching, including crop and livestock production, insect and disease control, and federal and state regulations related to farm practices. It is probably the most traditional of agricultural programs, yet technological advancements and product management and marketing have made higher education a necessity. The U.S. Department of Agriculture reports that farms are being operated by individuals with higher levels of education than in previous years. "Today's farm operator is twice as likely to have some college education as his or her predecessor of the mid-70s" (Monthly Labor Review [4-95], p. 9). Under the broad heading of Agriculture Production are three major categories to which programs may be assigned. The results of program reviews in these areas are shown in the table below:

Fiscal Year 1995 Program Review Outcomes in Agricultural Production, CIP 0103

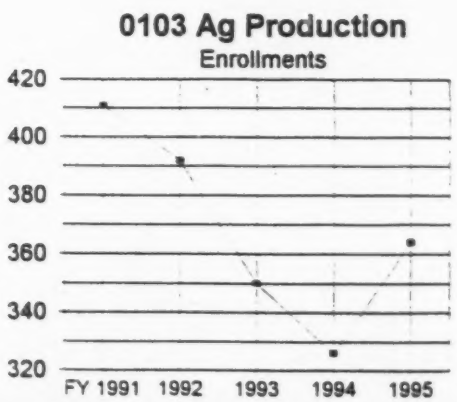
Program and CIP	# of curricula to receive minor improvements	# of curricula to be significantly modified	# of curricula to be reviewed again in FY 1996	# of curricula to be inactivated or withdrawn	Total
Ag Production, Gen CIP 010301	13	2	2	4	21
Animal Production CIP 010302	7	0	0	0	7

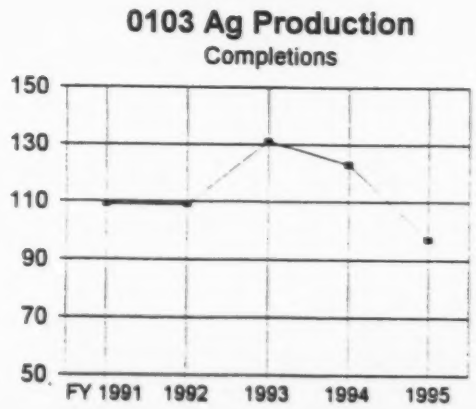
Program and CIP	# of curricula to receive minor improvements	# of curricula to be significantly modified	# of curricula to be reviewed again in FY 1996	# of curricula to be inactivated or withdrawn	Total
Crop Production CIP 010304	1	0	0	0	1
Total	21	2	2	4	29

Program Need

Enrollments in Agricultural Production Workers and Managers Programs. Statewide averages and enrollment information by specific college can be found in the Appendix, Tables B-2, 3, 4. These tables provide the percent of change from fiscal year 1991 to 1995 and the percent of change from fiscal years 1994 to 1995. The statewide five-year trend indicates enrollments in ag production programs were highest in fiscal year 1991. Enrollments for the next two years declined, but a growth spurt occurred in fiscal year 1995. Overall, a 7 percent decrease is noted in agriculture production enrollment over the five-year period, compared to a 4.9 percent decrease in enrollments for *all* community college occupational programs. From fiscal year 1994 to fiscal year 1995, agriculture production enrollments grew 12 percent, while the total community college occupational enrollment declined 1.8 percent. Credit hour generation varied by category. In Ag Production Workers- General, credit hours dropped 24 percent during the five-year period, while hours in Animal Production and Crop Production rose 3 and 6 percent, respectively.

Low enrollment programs (those with less than ten students officially admitted to the program) can be found at five institutions (Kankakee Community College, Kishwaukee College, Lake Land College, Shawnee Community College, and John Wood Community College). Both Kankakee Community College and Kishwaukee College indicate that these low enrollment figures are deceptive. While official *program* enrollments/majors are low, *course* enrollments are at satisfactory levels because of course takers or students officially enrolled in AA or AS degree programs who may be planning to transfer coursework to baccalaureate programs in agriculture. Shawnee Community College indicates that graduates are able to find employment and placement opportunities remain stable. Lake Land College and John Wood Community College report that agriculture production is a primary industry in their districts.





Completions in Agricultural Production Workers and Managers Programs. From 1991 to 1995, the number of completions in this specific area diminished 13.0 percent compared to a 15.0 percent increase for all agricultural programs and an 11.2 percent increase for all occupational programs (ICCB *Data and Characteristics of the Illinois Public Community College System*, June 1996) (see Appendix, Tables C-2, 3, 4). In fiscal year 1995, 62 degrees, seven advanced certificates, and 28 basic certificates were awarded in this agricultural program area.

Job Placement of Agricultural Production and Management Program Graduates. Slightly less than half of all fiscal year 1993 agricultural production and management graduates (43 of 93=46.2 percent) responded to the ICCB statewide follow-up survey conducted in fiscal year 1994. Over four-fifths of respondents (81.4 percent) were employed (1994 *Follow-Up Survey*, Table A-2, p. 13). Seven percent were unemployed and seeking work at the time of the survey (Table A-2, p. 13). Nearly one-quarter (23.3 percent) were currently enrolled in a related program of study (Table A-4, p. 15). Of those who were employed, three-quarters (75.8 percent) were working in a job related to their training (Table A-5, p. 16). Nearly one-half of the respondents (48.0 percent) obtained their current job after graduation. Thirty-two percent had their position prior to being admitted to the degree program, and 20.0 percent began their job during enrollment (Table A-6, p. 17). Nearly two-thirds (62.1 percent) were employed in the district in which they received their training. Less than one-third (31.0) were employed out-of-district but in Illinois, and 6.9 percent were employed out-of-state. The average salary of graduate respondents was $7.80 per hour, which compares to a statewide range of $6.50 to $14.50 per hour depending on experience. This equates to $16,224 per annum.

Labor Market Demand: Balance
Stable Opportunities Projected

Labor Market Demand. Currently there are 87,880 farmers and ranchers operating in the state of Illinois. (*HORIZONS Occupational Information*, 1997) According to the Monthly Labor Review (November 1993, p. 76), the occupation of "Farmers" is predicted to experience a 21 percent job decline nationwide between the years 1992 to 2005. The need for "Farmworkers" is projected to decline 16 percent. The primary reason for this decline is reduction in the number of smaller farms. The publication, *Illinois Farm Facts* (April 1995), shows that in 1950, there were 203,000 farms in Illinois, averaging 156 acres. By 1994, there were 77,000 farms averaging 368 acres. Therefore, the number of farms in Illinois declined 62.0 percent between 1950 and 1994, while the average acreage per farm more than doubled. Factors contributing to the declining need for farmers include larger, more efficient machinery, improved feeds, fertilizers, and pesticides, and rising operational costs. In Illinois, information soon to be released from the IOICC on Substate Employment Projections System (SEPS) data produced by the Illinois Department of Employment Security, shows the percent of change from 1992 to 2005 to be on the positive side, but only by 1.2 percent.

<u>Cost-Effectiveness</u>. Statewide, the unit costs for Agriculture Production programs, including Crop and Animal Production, are the highest of all agriculture programs. Combined, the unit cost of these programs averages $208.06 compared to $198.84 for all agriculture programs and $167.86 for all occupational programs. From fiscal years 1991 to 1995, cost increases were most significant in the area of salaries (+17 percent). As an example of efforts to reduce operating costs, Kishwaukee College reports that it was able to secure funding and staff training for power equipment technology through the Patten Corporation, a major industry in its district.

Quality. College reports cited knowledgeable faculty, increased levels of instruction using technology, and articulation efforts as quality aspects of their Agriculture Production programs. Carl Sandburg College and Lake Land College cited planned improvements in integrating computerized instruction into their programs. Based on its assessment of labor market demand, Lewis & Clark Community College plans to establish a certificate program to feed into its established AAS program; conversely, Carl Sandburg College is planning to drop its certificate and strengthen its degree. To provide a service to the community and increase student recruitment, Parkland College hosts contests for area high school FFA organizations. Rend Lake College will evaluate math requirements for its program and is considering adding mechanics courses in response to student requests. The college is developing a research seminar class to link the land lab to the classroom and will utilize Global Positioning Satellite technology and distance learning instruction in this and other agriculture curricula. The Global Positioning System (GPS) involves a series of 24 satellites which orbit the earth and, when used in conjunction with Variable Rate Technology (VRT) and a Geographic Information System (GIS), can provide information to farmers on such matters as appropriate levels of applications of fertilizer and herbicides and determining crop yields according to specific field locations. Kishwaukee College is addressing the large transfer component of its program by establishing capstone agreements with ISU, WIU, and University of Platteville. Shawnee Community College plans to develop a brochure, update and expand library resources, and increase classroom location and size. Both Parkland College and Black Hawk College report that new equine facilities are needed to improve program quality.

Agricultural Food Production and Processing, Operations and Management (CIP 010401)

Labor Market Demand: Very Slight Surplus
Growing Opportunities Projected

Richland Community College is currently the only community college which offers training for individuals with a combined focus on agriculture production, food processing, and marketing. The program was developed in conjunction with the industry leaders of Archer Daniels Midland (ADM) and A.E. Staley Company to train individuals for entry-level positions in the agriculture food processing industry.

The college reports that, nationally, employment of ag/food science technicians is expected to experience average employment growth through the year 2000. Employment opportunities will likely result from expanded research in food science. This is a new program which has seen very limited enrollment for the past four years, and the college has reported no completions. Yet, officials believe the program is cost-effective as there are no course requirements in the degree that are not shared with other programs (see Appendix, Tables B-5 and C-5, for enrollment and completion data). Quality recommendations stated in the college's report include identifying workplace competencies, improving articulation with high schools, and capstoning curriculum with senior institutions so students gain supervision and management skills and broaden employment opportunities. As a result of its review, the college determined that the program will be continued with the changes noted above.

BEST COPY AVAILABLE

Agricultural Supplies and Related Services (CIP 0105)

Students trained in programs in this area are prepared to sell supplies for agriculture production, provide agricultural services such as fertilizer applications, deal in management and finance, purchase and market agricultural products (as would be performed by grain elevator managers), and train animals for work or entertainment. There are two program areas in the broad category of Agricultural Supplies and Related Services. The first is Agricultural Supplies and Related Services (CIP 010501), and active programs are offered at three institutions. Program review outcomes show that Richland Community College's certificate will receive only minor changes. Spoon River College has elected to conduct a subsequent review in fiscal year 1996. Illinois Valley Community College decided to withdraw its program due to tenuous enrollments. A second program area is Equestrian/Equine Studies, Horse Management and Training (CIP 010507), which is available at Black Hawk College. It will be continued with minor improvements. These results are shown in the following table.

Fiscal Year 1995 Program Review Outcomes in CIP 0105					
Program and CIP	# of curricula to receive minor improvements	# of curricula to be significantly modified	# of curricula to be reviewed again in FY 1996	# of curricula to be inactivated or withdrawn	Total
Ag Supplies & Serv CIP 010501	1	0	2	1	4
Equine Mgmt CIP 010507	1	0	0	0	1
Total	2	0	2	1	5

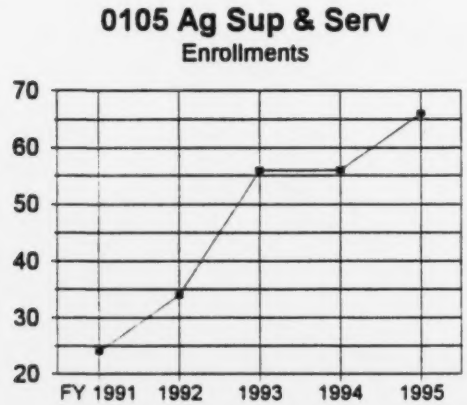
Program Need

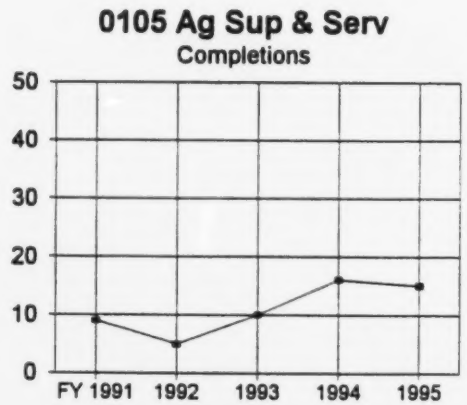
Enrollments in Agricultural Supplies and Related Services. Statewide averages and enrollment information by specific college can be found in the Appendix, Tables B-6, 7. These tables provide the percent of change from fiscal year 1991 to 1995 and the percent of change from fiscal years 1994 to 1995. These are very small programs. Enrollments in Agricultural Supplies and Related Services (CIP 010501) have increased from six to thirteen majors, while enrollments in Equestrian/Equine Studies (CIP 010507) have grown from 18 to 53 majors. This equates to an overall enrollment increase of three students between fiscal year 1991 to fiscal year 1995, while enrollments in all occupational programs declined slightly during this same period of time. From fiscal year 1994 to fiscal year 1995, enrollments grew by ten students in Equine Studies and remained stable in Agriculture Supplies.

All three agricultural supply and services programs exhibited low enrollments. Illinois Valley Community College decided that, although its program had only been in existence since 1993, such low enrollments could not justify its continuance. Richland Community College's program will be continued with minor changes. The curriculum is related to other programs and, therefore, utilizes the same faculty and facilities. The costs to offer such training are minimal.

Completions in Agricultural Supplies and Related Services. From 1991 to 1995, the number of completions grew 67 percent (N=43) compared to a 15.0 percent increase for *all agricultural* programs and an increase of 11.9 percent for *all occupational* programs (ICCB *Data and Characteristics of the Community College System*, June 1996). In fiscal year 1995, four AAS degrees were awarded along with eight advanced certificates in this program area (see Appendix, Tables C-6, 7).

Due to the small number of graduate respondents, aggregate follow-up information and analysis were not reported in the Fiscal Year 1994 *Follow-Up Study*.





Labor Market Demand. The *Occupational Outlook Quarterly* (p. 32, Fall 1993) states that, from 1992 to 2005, employment gains are expected in agricultural services as farm owners "contract out for services." *HORIZONS* states that there is a balance in the supply and demand for "sales and related managers." However, this occupation is projected to be among the 50 occupations expected to have the greatest number of job openings each year in all industries combined. Many openings will result from the need to fill vacancies left by those who leave the labor force, and most positions will be filled from within.

Labor Market Demand: Balance Growing Opportunities Projected

<u>Cost-Effectiveness</u>. Statewide unit cost figures are only available for Equine Studies (CIP 010507). The net unit cost of programs assigned to this CIP declined a modest 6 percent between fiscal years 1991 and 1995. This decline is likely due to an increase in credit hour generation. Courses which comprise programs in Agriculture Supplies and Services (CIP 010501) are shared by other related programs; therefore, a unit cost amount is unavailable.

<u>Quality</u>. Richland Community College indicates that to improve program effectiveness, an agricultural coordinator should be hired to teach classes, develop new programs, initiate a recruiting plan, improve communications with local employers, and work with high school faculty to develop a tech prep curriculum. In addition, Richland officials plan to incorporate the nationally developed competencies identified in the SCANS Report for America 2000. Black Hawk College reports that students list the three primary strengths of its Equestrian Science program as faculty expertise, hands-on laboratory experiences, and internships.

Ag Transfer Program

Results from the Fiscal Year 1994 *Follow-Up Study* indicated that 33.0 percent of all agriculture graduate respondents were currently pursuing further education. As a result of this finding, colleges were asked to respond to a specific question concerning articulation of agriculture programs in their fiscal year 1995 program review reports and to describe the extent that agriculture programs were articulated. Many colleges responded that courses were articulated, even those designed to prepare students for career entry following completion of AAS degree requirements. Others indicated that, since their degree was designed to prepare students for immediate career entry, articulation agreements with senior institutions had not been entered into. Given the nature of agricultural education, it is important that colleges assess the intent of students to determine if they are considering baccalaureate degree options as a part of their educational goals. If so, articulation of coursework should be strengthened.

Community colleges in Illinois have two transfer degrees ~ the Associate in Science and the Associate in Arts. In their program review reports, several institutions chose to conduct a broad evaluation of agriculture-related curricula and, therefore, reported on agriculture both as an occupational program and as an academic discipline as it applies to transfer. Numerous strengths were noted as a result of the colleges' evaluation of program need -- as evidenced in enrollment trends and retention, cost-effectiveness, and quality. John Wood Community College (JWCC) has four agriculture transfer classes, all of which satisfy major core course requirements at four primary senior institutions where students transfer. JWCC faculty will change courses to a performance-based instruction model in conjunction with collegewide efforts for all instructional programs. The college's report indicates an increase in enrollments in agriculture transfer classes over the past five years. At the local level, Parkland College reports that enrollments in several specific transfer courses have done well in the past three years: Introduction to Agricultural Economics, Introduction to Crop Science, Agricultural Applications of the Computer, and Introduction to Soil Science. Parkland students who matriculated in the University of Illinois' (U of I) College of Agriculture in the fall of 1992 earned median grade point average which closely corresponded to those of native students entering the U of I. As a result of its review, Lake Land College will increase software applications within its agricultural core curriculum and provide instruction on the use of "global positioning" technology. Lincoln Land Community College reports that course retention in agriculture transfer courses has averaged 94.5 percent over the last four years.

"Guarded optimism" might be an appropriate phrase to describe the likelihood for employment opportunities for community college students who transfer to baccalaureate degrees in agriculture. An article in the *Chronicle of Higher Education* (June 10, 1992) reports that an increasing number of students are choosing agriculture-related majors. A spokesperson from the University of Illinois indicated that, in previous years, students choosing to major in agriculture were from rural communities and family farms. Their goal was often to become farmers themselves. Recently, student demographics show that many more are likely to come from urban areas with no intention of working on a farm after graduation. Most of the U of I's recent growth in agriculture enrollments has been in majors linked with advanced technology, including agricultural and food engineering, biotechnology, agribusiness, and environmental science. The article notes that "despite the growing interest in agriculture majors, the U.S. Department of Agriculture predicts that, through the 1990's, there will be an annual shortage

of about 11 percent in the number of qualified graduates available to fill jobs in the food, agriculture, and natural-resource industries."

However, the optimism suggested in the preceding paragraph is somewhat tempered by the Illinois Board of Higher Education's report on follow-up results of completers of baccalaureate programs in agriculture ten years after graduation. The report indicated that graduates of agriculture and natural resources "reported considerably weaker connections" -- as to the likelihood of being employed in "jobs related or closely related to their undergraduate majors."

Community college students who choose to pursue baccalaureate degrees should find transferring easier as a result of recent articulation initiatives. During fiscal year 1996, faculty in agriculture representing public and private institutions of higher education, participated in panel discussions to establish a recommended curriculum for the first two years of a baccalaureate degree in agriculture. In June 1996, the panel's recommendations will be brought before the Illinois Community College Board for endorsement. Suggested coursework to facilitate transfer is shown on pages 52-55 in the Appendix. As a result of these efforts, colleges reported plans to review agricultural course offerings and update course content accordingly.

Recommendations for Agriculture Programs

Quotations from two authors summarize the changing nature of agricultural and shift toward ag-related business.

> A number of important changes have dramatically altered the face of agriculture. The need to achieve economies of scale and apply technological developments in order to compete has been a driving force behind these changes. Farm size grew and farm numbers declined as many less efficient farms exited agriculture. Improved technology associated with production agriculture dramatically changes the demand for labor. . . Production specialization (in terms of individual farms and even particular areas), profit maximization (as opposed to output maximization) and environmental concerns have become the ideology by which farmers now manage their businesses. (Ilg, Randy E. "The Changing Face of Farm Employment", *Monthly Labor Review*, Vol. 118, No. 4, April, 1995, p.10)

Drucker (1994) emphasizes that today's agricultural producers are agribusiness persons which he characterizes as, "arguably the most capital-intensive, most technologically intensive and most information intensive industry around." (Drucker, Peter F. "The Age of Social Transformation", The Atlantic Monthly, November 1994, p. 54.) Both authors see an increased emphasis in ag-related business and the need for higher levels of education for persons interested in pursuing employment in these occupations.

The statewide analysis of agricultural programs has offered several insights into agricultural programs. In order to maximize program effectiveness, colleges are advised to:

- continue to increase the efficiency of how instruction is delivered and continue to consolidate programs, both within the institution and with other colleges in their

BEST COPY AVAILABLE

respective regions. Colleges are encouraged to consider cooperative agreements with other institutions to reduce costs and resolve concerns of low enrollments for programs.

- continue efforts to infuse technology into agriculture curricula.

- investigate distance learning opportunities to reach more students and address business and industry needs across the state.

- construct agriculture curricula to facilitate transfer options for students by developing transferable general education requirements for AAS degrees and by adopting the newly developed Illinois Articulation Initiative (IAI) model for general education and major-specific coursework.

- seek opportunities to develop partnerships with area high schools, universities, and businesses to facilitate recruitment of high school students, simplify transfer through capstone agreements, and enhance placement opportunities through internship experiences.

- continue to monitor the job market carefully, relying on local, regional, and statewide labor market information and working to improve follow-up response rates to aid institutional decision making.

Horticultural Programs in Community Colleges

Community colleges also offer a variety of horticulture programs. Available information indicates that Illinois businesses play active roles in several horticulture related industries. There are numerous golf courses and country clubs across the state and an abundance of florists in urbanized areas. Community college programs in horticulture are assigned to one of the following categories (U.S. Department of Education, *Classification of Instructional Programs*, 1990, p. 51-52)

- General Horticulture programs (CIP 010601) train individuals to produce and market plants, trees, and shrubs for ornamental, recreational, and aesthetic purposes and manage related businesses.

- Arboriculture programs (CIP 010602) provide instruction in the identification, care, and maintenance of trees, shrubs, and vines.

- Ornamental Horticulture programs (CIP 010603) prepare individuals to produce flowers, foliage, and related plant materials in fields and greenhouses for ornamental purposes and to arrange, package, and market these materials.

- Greenhouse Operation and Management programs (CIP 010604) prepare individuals to produce commercial plant species in controlled environments and to manage commercial and experimental greenhouse operations.

- Landscaping programs (CIP 010605) prepare individuals to procure, design, plant, and maintain landscapes and interiorscapes.

- Nursery Operation and Management programs (CIP 010606) provide instruction on producing turf, shrubs, and trees for the purpose of transplanting or propagation.

- Turf Management programs (CIP 010607) prepare individuals to establish, manage, and maintain lawns, athletic fields, or golf courses and to produce turf for transplantation.

- Parks and Grounds Management programs (CIP 010610) instruct individuals in the interpretation of maps, grading plans, construction drawings, and landscape design plans and specifications, cost estimates, and legal aspects of acquiring, developing, and using land for parks.

Approximately two-fifths of community colleges offer horticultural programs (N=20/49). Programs are dispersed throughout the state with eight colleges offering programs in the northern part of the state, five in the central, and seven in the southern sector. The status of the horticulture industry in Illinois is not as well documented as agriculture; however, the products grown in various regions define types of educational programs which may be appropriate. For example, Cook County in the north has achieved national prominence as a leader in the production of nursery and greenhouse products. Kankakee County, another northern site, is a primary producer of gladioli, and the Illinois and Mississippi River valleys are productive fruit-growing regions (p. 70, "Illinois," The World Book Encyclopedia, 1994).

Table A-2 in the Appendix displays the type of offerings available at specific institutions. Horticulture programs may be structured as Associate in Applied Science degrees, which require a minimum of 60 semester credit hours, and certificates at a maximum of 50 semester credits, which include shorter, basic certificates or longer, more advanced certificates. However, students may also enroll as coursetakers if they only are interested in completing specific coursework to meet immediate needs, rather than to graduate from a specified program of study. In fact, nearly 1,000 credit hours were generated by students enrolled in vocational skills courses in 1995.

Results from Community College Program Reviews of Horticulture Programs. As a result of their program reviews, colleges determined that 58 curricula would be continued with minor improvements, 4 curricula would be significantly modified, seven curricula would be discontinued, and one curriculum would be reviewed again in fiscal year 1996. A breakdown by area is shown in the table below.

Fiscal Year 1995 Horticultural Program Review Outcomes					
Program Name	# of programs to receive minor improvements	# of programs to be significantly modified	# of programs to be reviewed again in FY 1996	# of programs to be inactivated or withdrawn	Total
Horticulture, Gen	32	0	1	4	37
Arboriculture	1	0	0	0	1
Ornamental Hort	4	0	0	1	5
Greenhouse Oper	4	0	0	0	4
Landscaping Oper	8	1	0	0	9
Nursery Oper	4	1	0	1	6
Turf Mgmt	5	2	0	0	7
Park Planning	0	0	0	1	1
Total	58	4	1	7	70

Additional information about the withdrawn and inactivated programs follows. Shawnee Community College withdrew degrees in General Horticulture and Nursery Management due to low enrollments. Kishwaukee College withdrew a Garden Center Operations certificate due to a lack of student interest. Chicago's Harold Washington College inactivated its General Horticulture program, but may revive it if a cooperative initiative with the Chicago Park District develops. College of DuPage inactivated a certificate program on Interior Management, and Wabash Valley College in Illinois Eastern's district inactivated its program in Park Facilities/Landscape Technology. Spoon River College withdrew two advanced certificates which had been offered at the Illinois River Correctional Facility.

Due to the similarity of horticulture programs, the following statewide analysis is done in the aggregate, rather than by specific program areas.

Horticulture Statewide Program Need

Community college program review reports included information pertaining to enrollments, completions, and job placement of graduates to assess program need. Each of these components is further examined in the following paragraphs.

Horticulture Enrollments. A comparison of statewide horticulture enrollments for students majoring in these fields between fiscal years 1991 and 1995 shows a 10 percent increase (N=147), compared to a decrease of 4.9 percent in enrollments in all occupational programs during this time frame. While most horticulture specialties experienced growth between fiscal years 1991 and 1995, there were two exceptions which involved a small number of students. One of the larger programs (Landscaping - CIP 010605) decreased by seven students (-2.6 percent), and one small program (Parks and Grounds Management - CIP 010610) decreased by a dozen students (-34.3 percent). The number of students majoring in the other six horticulture programs increased between 1991 and 1995. Those specialized curricula exhibiting notable growth were two small programs – Turf Management (N=52, or 123.8 percent) and Ornamental Horticulture (N=32, or 22.2 percent) and one large one -- General Horticulture Service Operations and Management (N=56, or 6.0 percent).

Statewide short-term enrollment pattern changes from 1994 to 1995 warrant comment. Between fiscal years 1994 and 1995, overall horticulture enrollments increased 4.0 percent (N=60), while the total community college occupational enrollment decreased 8.0 percent. Notable increases occurred in Ornamental Horticulture (N=46) followed by Turf Management (N=22). Enrollments in Landscaping between fiscal years 1994 and 1995 were down at 265, but remained close to the five-year average of 268. (See enrollment information by specific college in the Appendix, Tables D-1 through 8.)

Nineteen horticulture programs were identified as having enrollments of less than ten students. Six colleges, where enrollment has dwindled to low enrollment levels, chose to withdraw their horticulture curricula. Colleges which opted to continue low enrollment programs indicate that, in many cases, students tend to enroll in general horticulture degrees. Once students begin their coursework, they may decide to branch into specialized certificates, but remain officially enrolled in the degree program. In addition, course requirements in horticulture programs are very similar, hence requirements for additional faculty associated with offering most specialized instruction are minimal.

Horticulture Credit Hour Production. Overall, the number of credit hours generated statewide in horticulture programs climbed 18 percent between 1991 and 1995. A display of credit hours by program area is shown in the table below.

Program and CIP	1991	1995	Percent of Change
Horticulture, General 010601	633	442	-30.2%
Arboriculture 010602	885	866	- 2.1%
Ornamental Horticulture 010603	5,871	7,334	24.9%

Program and CIP	1991	1995	Percent of Change
Greenhouse Operations 010604	1,077	1,568	45.6%
Landscaping Operations 010605	2,282	2,340	2.5%
Nursery Operations 010606	477	576	20.8%
Turf Management 010607	1,274	1,652	29.7%
Park Planning 010610	42	42	0.0%
Total	12,541	14,820	18.2%

Horticulture Completions. Between fiscal years 1991 and 1995, completions across horticulture programs grew 36.0 percent (N=75) compared to an 11.2 percent increase in completions in all occupational programs (ICCB *Data and Characteristics of the Illinois Public Community College System,* June 1996). Over this five-year time frame, completions were up in all horticulture programs except one. Landscaping exhibited a slight decline of eight completers (-12.7 percent). The number of completions in Landscaping rebounded between fiscal years 1994 and 1995 with an increase of 17 graduates (44.7 percent). In the remaining specific horticulture programs, increases over the five-year period in the number of completers were notable in General Horticulture (N=47, or 49.0 percent), Ornamental Horticulture (N=18, or 58.1 percent), and Greenhouse Operation and Management (N=16, or 76.2 percent). Statewide, in fiscal year 1995, there were 155 degrees, 58 advanced certificates, and 101 basic certificates awarded to students in horticulture curricula (ICCB A1 completion data). Short-term data show that, between fiscal years 1994 and 1995, completions in horticulture programs increased 41.0 percent (see Appendix, Tables E-1 through 8).

Job Placement of Horticulture Graduates. Fifty-eight percent of all fiscal year 1993 Horticulture graduates (85 of 146) responded to the ICCB statewide follow-up survey conducted in fiscal year 1994. The results of the survey revealed that 83.5 percent of the respondents were employed (FY 1994 *Follow-Up Study*, Table A-1, p. 12) and more than four out of five (84.5 percent) were working full-time. Nearly 5 percent of respondents were unemployed and seeking work (Table A-2, p. 13), which compares to a statewide rate, at the time, of 6.0 percent (*Illinois Labor Market Review*, March 1994). One of every five graduates was pursuing additional education when surveyed (Table A-4, p. 15). Respondents frequently began their position either after program completion (38.2 percent) or during program enrollment (36.8 percent). The remaining quarter had their position prior to program entrance (Table A-6, p. 17). Over half (55.9 percent) were working in-district compared to 38.2 percent who were working out-of district but in Illinois, and 5.9 percent who were working out-of-state (Table A-7, p. 18). The average salary of respondents working full-time was $9.77 per hour (Table A-8, p. 19), or $20,321 per annum. This compares to a starting wage of $5.00 per hour and average wages from $7.30 to $8.00 per hour as reported in the 1994 Occupational Wage Survey for Illinois.

Labor Market Demand: Balance Growing Opportunities Projected

Labor Market Demand. The forthcoming edition (1997) of *HORIZONS* reports that there is balance between the supply and demand of workers in horticultural occupations. Demand for workers fluctuates according to weather conditions and construction industry activity. For example, severe winter storms may cause nursery stock to be replaced, and wet springtime

occupations. Demand for workers fluctuates according to weather conditions and construction industry activity. For example, severe winter storms may cause nursery stock to be replaced, and wet springtime weather may curb planting efforts. As construction activity increases, so does the demand for horticultural stock and services. Nationally, 29.4 percent of workers are replaced each year. Employment opportunities are expected to grow about as fast as average for gardeners, groundskeepers and related occupations. *HORIZONS* reports that "nursery workers" is among the 50 occupations expected to have the greatest number of average annual job openings in Illinois through the year 2005. A slight shortage is noted for floral designers; however, low starting pay and limited opportunities for advancement may deter people from starting/staying in this occupation. An industry review of worker placement in Illinois shows that most persons employed in the Landscape and Horticultural Services Industry work as lawn maintenance workers (38.2 percent); less than one-fifth work as gardeners and groundskeepers (17.9 percent) and only 8.2 percent work as nursery workers. In other industries, almost 25 percent of nursery workers are employed in retail stores. Over 15 percent of gardeners and groundskeepers are employed by local governments, excluding educational facilities and hospitals. Over 14 percent are employed by miscellaneous amusement and recreation businesses, and nearly 12 percent are employed by private households.

College placement services can be a source of information on employment demand. Two colleges in the northern part of the state supplied some information in this area. College of Lake County reported that, from January to May 1995, 73 horticulture-related job announcements were listed by the college's placement services. McHenry County College cited demand for horticultural workers ranging from 123 openings listed by the college's job placement office in 1993-94 to 157 in 1994-95.

Program Expansions and Partnerships. The volume of activity in creating additional programs is also an indicator of program need. Colleges have conducted local needs analysis and determined that additional offerings are required to meet area needs. Lewis & Clark Community College added a certificate program in turf management, and Kishwaukee College reports that its enrollment in this program area is the largest in the state, amounting to half the statewide enrollment. State Community College has received an AMERICORP grant which will upgrade their horticulture program and is expected to result in increased enrollment. The college plans to expand its horticulture program by offering an associate degree in Ecosystem Management. After a two-year study of enrollments, Kishwaukee College plans to withdraw its horticulture equipment technology degree and replace it with a 20 hour certificate. Horticulture is Kishwaukee's third largest vocational program with six degree options and five certificate options.

Several colleges have established Horticulture programs with the Illinois Department of Corrections (DOC). In 1993, a statewide curriculum revision for all horticulture programs in correctional settings was implemented. The process was facilitated by a curriculum specialist and involved state educational agencies, along with business and industry representatives. Standardization of horticulture curricula at correctional facilities ensures the transferability of coursework throughout the state, improves the cost-effectiveness of instruction, and provides completers with a uniform set of competencies upon completion. Two colleges, Lincoln Trail College in Illinois Eastern Community College's district and Kaskaskia College, reported on DOC-related programs in their reports. The colleges indicate that a different set of challenges

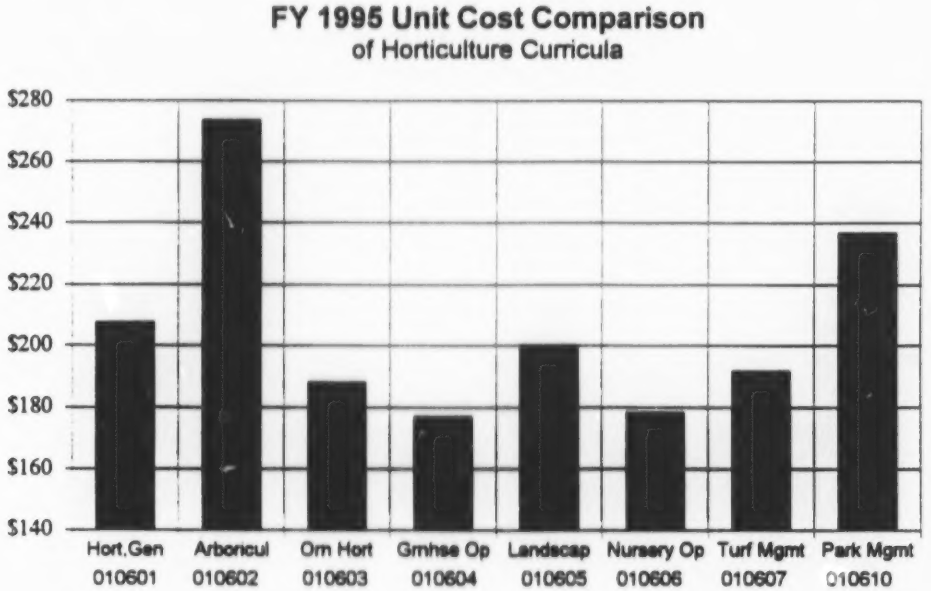
BEST COPY AVAILABLE

electronic detention, work release, or be released from the system. These conditions often create difficulties for students to complete certificates, and once they are released from the correctional system, job placement data are difficult to obtain.

Occupational Skills Standards. During the past year, an agricultural subcouncil of the Illinois Occupational Skills Standards Credentialing Council (IOSSCC) has been meeting to identify and formalize a list of skills standards appropriate for occupations within horticulture. The four core areas for which standards are being developed include Landscaping Technician, Florist Technician, Greenhouse/Nursery Management, and Garden Center Management. It is anticipated that the subcouncil's final draft, which will include endorsement from the horticulture industry, is scheduled for dissemination by late summer or early fall of 1996.

Cost-Effectiveness of Horticulture Programs

In fiscal year 1995, the average unit cost for all occupational programs was $167.86. The unit cost for all horticulture programs is greater at $194.63 with Arboriculture and Park/Grounds Management as the more expensive programs. Both of these program areas had high direct salary costs and direct department costs. Equipment costs for Arboriculture were highest of all programs and Park/Grounds Management had the highest costs of related programs in allocated costs and operations and maintenance. As colleges continue to add computer-assisted instruction, particularly in the area of design, equipment costs will likely increase. A comparison of unit costs across program areas is shown below.



Quality. College reports enumerated many quality aspects of their horticulture programs. Topping the list were faculty and their knowledge of the field. Many instructors are employed in horticulture-related business on a full-time basis, in addition to teaching part-time at the local community college. Reports on quality also mentioned internships and cooperative work experiences which afford students opportunities for direct, hands-on experiences. Increased technology, excellent facilities, and affiliation with professional certification groups, such as the Illinois Arborist Association and Illinois Florist Association, were also identified as programmatic strengths. Other specific examples follow.

Teaching/Learning. McHenry County College spent the past three years restructuring its general horticulture curriculum with excellent results. The college increased enrollments and the number of credit hours by 40 percent from 1992 to 1994. The number of AAS degree completers has increased by 50 percent from 1990 to 1994. This action led to greater industry support in the form of internships, scholarships, and job placement of program completers. Flexible scheduling at the College of Lake County permits students from its local high school's Technology Campus to attend horticulture classes. An interactive, multimedia program has been written and tested in conjunction with the University of Illinois which will enable students to better identify trees and shrubs. Danville Area Community College's horticulture instructor has written and published the text book for the college's program. Occupational competencies are being developed as a means of supporting the college's institutional guarantees -- that graduates will be able to perform the skills they acquired in the classroom once they join the labor force. Kaskaskia College is upgrading the facilities used for the horticulture program so they meet industry standards. Power equipment has been upgraded and repaired.

Computerized instruction at Kaskaskia College offers students opportunities to learn inventory control and acquire design experience. At the College of DuPage, a computerized greenhouse environmental control and reporting system has been approved which will provide excellent technological training opportunities. College of DuPage, Kishwaukee College, and McHenry County College plan to increase levels of computer technology to their programs, and Kishwaukee College will also add distance learning. Richland Community College reports that workplace competencies have been written through the use of a DACUM process and competencies identified in the SCANS Report for America 2000 will be incorporated into the curriculum. The college plans to study the feasibility of structuring part of the curriculum on an open-entry/open-exit competency-based format. This would allow individuals to enter the program at various skill levels and advance to higher levels after demonstrating proficiency.

Community. Danville Area Community College's horticulture facilities, supplies, and faculty are utilized to conduct workshops for employee and community groups interested in a wide range of subjects, such as home lawn care, holiday decorating, houseplants, and flower arranging. Richland Community College sponsors an active Horticulture Club which conducts promotional activities to increase residents' awareness of program offerings. At Triton College, students have been co-hosting many of the area's home and garden shows, which has given the horticulture program greater exposure. College of DuPage offers a free lecture series on horticulture-related topics (one per quarter) for students and district residents. Topics covered include ornamental grasses, ecological horticulture, water gardening, herbs, alternative pest management, computers in horticulture, and unique plant materials.

BEST COPY AVAILABLE

Recommendations for Horticulture Programs

The statewide analysis of horticulture programs yielded the following recommendations for colleges. In order to maximize program effectiveness, colleges should:

- plan to incorporate Occupational Skills Standards for horticulture curricula into their programs. The skills standards, developed in conjunction with the business community, are scheduled to be disseminated by fall 1996. Incorporating these standards will help ensure that completers of horticulture training in community colleges will meet industry-accepted standards.

- continue to implement emerging technology into the instructional process so students have opportunities to utilize up-to-date equipment and computer software.

Conclusion

Advancements in technology, global competition, and economic and environmental concerns have impacted the fields of agriculture and horticulture. In fiscal year 1995, agriculture and horticulture programs were among those which community colleges were required to review using criteria of need, cost-effectiveness, and quality. The purpose of this report was to highlight the findings of community college program reviews, analyze enrollments and completions, job placement, and review labor market supply and demand projections. In general, many positive trends were noted.

Conclusions for Agriculture. Based on local need, just under one-half of Illinois community colleges offer agriculture programs to support various related industries throughout the state. Changes in the field of agriculture are occurring primarily as a result of technological advancements and economic and environmental concerns. Community colleges conducted reviews of agriculture programs to assess how well programs were meeting local needs. Results show that 42 programs were continued with minor improvements, three were significantly modified, four were scheduled for a subsequent review in fiscal year 1996, and ten were eliminated. Enrollments in all areas of agriculture have increased at rates greater than enrollments for all occupational programs combined for the five-year period from fiscal year 1991 to fiscal year 1995. Program areas experiencing the most growth in this time period include those assigned to Agricultural Services and Supplies (CIP 010501) and Equine Management (010507). Enrollment declines were noted in General Agricultural Production (CIP 010301) and Animal Production (CIP 010302). These enrollments correspond to labor market supply and demand projections as demand is increasing for agricultural services and reaching a plateau in production. Recent occupational follow-up data reveal that graduates of Agriculture Business and Management programs (CIP 010101) were most likely to be employed or continuing their education. Unemployment rates were 4.0 percent for this group of completers, compared to an unemployment rate of 7.0 percent for graduates of Ag Production and Management. Among all agriculture programs, those in Agriculture Business and Management were the most cost-effective. Low enrollments in many agriculture programs cause higher unit costs which present challenges to institutions. Quality features of agriculture programs included

numerous teaching/learning initiatives, educational and business partnerships, strong articulation efforts, and student activities.

The statewide analysis of agriculture programs led to several recommendations, many as a result of exemplary practices reported by community colleges. In order to strengthen program effectiveness, colleges are advised to:

- continue to increase the efficiency of how instruction is delivered and continue to consolidate programs, both within the institution and with other colleges in their respective regions. Colleges are encouraged to consider cooperative agreements with other institutions to reduce costs and resolve concerns of low enrollments for programs.

- continue efforts to infuse technology into agriculture curricula.

- investigate distance learning opportunities to reach more students and address business and industry needs across the state.

- construct agriculture curricula to facilitate transfer options for students by developing transferable general education requirements for AAS degrees and by adopting the newly developed Illinois Articulation Initiative (IAI) model for general education and major-specific coursework.

- seek opportunities to develop partnerships with area high schools, universities, and businesses to facilitate recruitment of high school students, simplify transfer through capstone agreements, and enhance placement opportunities through internship experiences.

- continue to monitor the job market carefully, relying on local, regional, and statewide labor market information and working to improve follow-up response rates to aid institutional decision making.

Conclusions for Horticulture. Approximately two-fifths of Illinois community colleges offer horticulture programs. The number of horticulture programs offered by community colleges has grown as communities expand into formerly rural landscapes and construction activity increases. Community colleges conducted reviews of horticulture curricula during fiscal year 1995 to determine how well programs were meeting local needs. Program review results show that 58 curricula will be continued, four will be significantly modified, one is scheduled for further review in fiscal year 1996, and eight programs are being eliminated. A review of enrollment data from fiscal years 1991 to 1995 shows that the number of students enrolling in horticulture programs has fluctuated considerably. A comparison of horticulture enrollments from fiscal years 1991 to 1995 shows a 10 percent increase, compared to a decrease of 4.9 percent for all occupational enrollments during this time period. Most horticulture programs exhibited increased enrollments with the exception of Landscaping. Excluding very small programs, the area which showed the most growth during this time was Turf Management.

From 1991 to 1995, the percentage increase of horticulture completions exceeded the percent increase of completions for all occupational programs. Increases in the number of completers

BEST COPY AVAILABLE

were notable in General Horticulture, Ornamental Horticulture, and Greenhouse Operation and Management.

Responses from the statewide occupational follow-up survey indicated that 83.5 percent of horticulture graduates were employed and only 5 percent of respondents were unemployed and seeking work. Approximately 20 percent of those responding were pursuing additional education at the time of the survey. Employment opportunities are expected to grow about as fast as average for gardeners, groundskeepers, and related workers. In addition, a slight shortage is noted for floral designers. Colleges report that horticulture programs are generally cost-effective; however, low enrollments in new programs escalate unit costs. Costs were highest in Arboriculture and Park Management programs. Quality aspects of horticulture programs were well documented in reports submitted by the colleges. These included faculty and their knowledge of the horticulture field, internships and cooperative work experiences, increased technology, excellent facilities, and affiliation with professional certification groups, such as the Illinois Arborist Association and Illinois Florist Association. Model teaching/learning initiatives were noted, as well as efforts to serve communities through various innovative projects.

From the analysis of program review reports, data from student follow-up surveys and enrollment/completion records, and labor market information, several recommendations emerged. In order to promote program effectiveness, colleges are encouraged to:

- plan to incorporate Occupational Skills Standards for horticulture curricula into their programs. The skills standards, developed in conjunction with the business community, are scheduled to be disseminated by fall 1996. Incorporating these standards will help ensure that completers of horticulture training in community colleges will meet industry-accepted standards.

- continue to implement emerging technology into the instructional process so students have opportunities to utilize up-to-date equipment and computer software.

Despite the fact that agriculture and horticulture programs are relatively small programs at Illinois community colleges, their importance to the state's economy is well documented. Numerous challenges exist for institutions to keep pace with technology, address low enrollment and cost-effectiveness issues, while continuing to meet evolving local needs.

BIBLIOGRAPHY

Clements, John. (1989). Illinois Facts. Clements Research II, Inc., Dallas, Texas.

Dillon, Conley Hall, Jr. (1994-95, Winter). *Working Outdoors*. Occupational Outlook Quarterly. Volume 38, Number 4, pp. 32-35.

Dodge, Susan. *(1992, June 10). Students Show Growing Interest in Agriculture, but Careers Other Than Farming Are the Lure*. The Chronicle of Higher Education. Volume 38, Number 40, pp. A 27-28.

Drucker, Peter F. (November 1994). *The Age of Social Transformation*, The Atlantic Monthly, Volume 274, Number 5, pp. 53-80.

Foodless Farming, The Futurist, Volume 28, Number 3, pp. 55-56.

Gale Research, Inc. (1995). Encyclopedia of Associations: National Organizations of the U.S. CD-ROM. Detroit, Michigan: Author.

Ilg, Randy E. (April 1995.) *The Changing Face of Farm Employment*, Monthly Labor Review, Volume 118, Number 4, pp. 3-12.

Illinois Agricultural Statistics Service. (1995, April). *Illinois Farm Facts*. Circular 1237. Springfield, Illinois: Author.

Illinois Community College Board. (1991, 1992, 1993, 1994, 1995, 1996-In Press). *Data and Characteristics of the Illinois Public Community College System*. Springfield, Illinois: Author.

Illinois Community College Board. (October, 1994). *1994 Follow-Up Study*. Springfield, Illinois: Author.

Illinois Department of Employment Security. (In Press). *Occupational Projections 2005*. Chicago, Illinois: Author.

Illinois Occupational Information Coordinating Committee. HORIZONS, Illinois Career Information System. (1995, 1996, 1997-In Press). Springfield, Illinois: Author.

U.S. Department of Education. (1990). Classification of Instructional Programs. Washington, D.C.: Author. pp. 51-52.

U.S. Department of Labor. (1993, November). *The American Work Force: 1992-2005*. Occupational Outlook Quarterly, Volume 116, Number 11.

U.S. Department of Labor. (Spring, 1994). *The 1992-2005 Job Outlook in Brief.* Occupational Outlook Quarterly, Volume 38, Number 1, pp. 2-45.

Rosenthal, Neal H. (1995, June). *The Nature of Occupational Employment Growth: 1983-93.* Monthly Labor Review, Volume 118, Number 6, pp. 45-54.

World Book, Inc. (1994). The World Book Encyclopedia. Volume 10. U.S.A: Author.

APPENDIX

COMMUNITY COLLEGE PROGRAMS IN AGRICULTURE

Table A-1

College Name	Ag Bus & Mgmt CIP 010101	Ag Production CIP 010301	Ag Production CIP 010302	Ag Production CIP 010304	Ag Processing CIP 010401	Ag Supplies & Services CIP 010501	Ag Supplies & Services CIP 010507
Kaskaskia	X						
Black Hawk	X	X	X				X
Parkland	X		X				
Danville	X						
Il Valley		X				X	
Il Central	X						
Lake Land	X	X	X	X			
Sandburg		X					
Highland	X	X					
Kankakee	X	X					
Rend Lake	X	X					
Kishwaukee	X	X	X				
Joliet	X	X	X				
Lincoln Land		X					
Wabash Valley	X	X					
Shawnee	X	X					
Spoon River		X				X	
Lewis & Clark	X						
Richland					X	X	
John Wood	X	X	X				

BEST COPY AVAILABLE

COMMUNITY COLLEGE PROGRAMS IN HORTICULTURE

Table A-2

College Name	Hort, Gen 010601	Arboriculture 010602	Ornamental Hort 010603	Greenhouse Op 010604	Landscaping 010605	Nursery Op 010606	Turf Mgmt 010607	Park Plng 010610
Kaskaskia	X							
DuPage	X		X	X	X	X	X	
Black Hawk	X							
Triton				X	X			
Danville			X		X			
Chic-Wash			X					
Harper	X	X	X	X	X	X	X	X
Il Central	X				X		X	
Lake Land	X							
Rend Lake	X							
Belleville	X							
Kishwaukee	X		X	X	X	X	X	
Joliet	X		X	X	X	X	X	
Lincoln Land					X			
McHenry	X		X		X			
Lincoln Trail	X							
Shawnee						X		
Lake County		X	X		X		X	
Southeastern	X	X		X	X	X	X	
Spoon River	X							
Lewis & Clar							X	
Richland	X							
State	X							

Illinois Community College Board

Table B-1

ANNUAL UNDUPLICATED ENROLLMENT IN
AGRICULTURAL BUSINESS & MANAGEMENT, GENERAL
CIP 010101

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
522	Belleville*	20	20	20	20	11	-45.0%	-45.0%
503	Black Hawk	19	24	27	34	32	68.4%	-5.9%
507	Danville	13	10	8	10	6	-53.8%	-40.0%
519	Highland	8	4	8	4	6	-25.0%	50.0%
514	Illinois Central	33	31	44	34	42	27.3%	23.5%
529	Illinois Eastern	(14)	(29)	(30)	(28)	(41)	(192.9%)	(46.4%)
	Wabash Valley	14	29	30	28	41	192.9%	46.4%
525	Joliet	27	29	34	37	36	33.3%	-2.7%
520	Kankakee	11	4	3	4	7	-36.4%	75.0%
501	Kaskaskia	32	32	36	34	29	-9.4%	-14.7%
523	Kishwaukee	11	10	6	9	3	-72.7%	-66.7%
517	Lake Land	28	26	32	33	27	-3.6%	-18.2%
536	Lewis & Clark	8	15	25	25	19	137.5%	-24.0%
528	McHenry*	7	6	1	0	0	-100.0%	–
505	Parkland	58	79	64	61	48	-17.2%	-21.3%
521	Rend Lake	24	24	25	27	25	4.2%	-7.4%
537	Richland*	2	3	1	1	0	-100.0%	-100.0%
531	Shawnee	2	6	6	4	6	200.0%	50.0%
539	Wood	8	13	51	50	31	287.5%	-38.0%
	Total	325	365	421	415	369	13.5%	-11.1%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Enrollments

Illinois Community College Board

Table B-2

ANNUAL UNDUPLICATED ENROLLMENT IN
AGRICULTURAL PRODUCTION WORKERS & MANAGERS, GENERAL
CIP 010301

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
503	Black Hawk	42	40	47	49	55	31.0%	12.2%
519	Highland	21	14	11	12	13	-38.1%	8.3%
529	Illinois Eastern	(32)	(20)	(18)	(25)	(24)	(-25.0%)	(-4.0%)
	Wabash Valley	32	20	18	25	24	-25.0%	-4.0%
513	Illinois Valley	17	23	16	1	2	-88.2%	100.0%
525	Joliet	47	44	44	42	53	12.8%	26.2%
520	Kankakee	4	3	0	0	0	-100.0%	--
501	Kaskaskia*	5	0	0	0	0	-100.0%	--
523	Kishwaukee	6	4	5	7	7	16.7%	0.0%
517	Lake Land	31	36	25	25	46	--	84.0%
536	Lewis & Clark*	6	0	0	0	0	-100.0%	--
526	Lincoln Land	34	34	27	32	31	-8.8%	-3.1%
521	Rend Lake	13	20	20	17	22	69.2%	29.4%
518	Sandburg	13	13	8	15	14	7.7%	-6.7%
531	Shawnee	23	21	7	2	1	-95.7%	-50.0%
534	Spoon River	23	28	25	22	18	-21.7%	-18.2%
539	Wood	1	0	5	1	1	0.0%	0.0%
	Total	318	300	258	250	287	-9.7%	14.8%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Enrollments

Illinois Community College Board

Table B-3

ANNUAL UNDUPLICATED ENROLLMENT IN
AGRICULTURAL ANIMAL HUSBANDRY & PRODUCTION MANAGEMENT
CIP 010302

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
503	Black Hawk	31	25	23	17	14	-54.8%	-17.6%
525	Joliet	0	0	0	0	0	--	--
523	Kishwaukee	4	5	9	8	11	175.0%	37.5%
517	Lake Land	1	3	2	5	4	300.0%	-20.0%
505	Parkland	32	37	28	18	25	-21.9%	38.9%
539	Wood	24	22	29	27	22	-8.3%	-18.5%
	Total	92	92	91	75	76	-17.4%	1.3%

SOURCE OF DATA: A1 Enrollments

Illinois Community College Board

Table B-4

ANNUAL UNDUPLICATED ENROLLMENT IN
CROP PRODUCTION OPERATIONS & MANAGEMENT
CIP 010304

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
517	Lake Land	1	0	1	1	1	0.0%	0.0%
	Total	1	0	1	1	1	0.0%	0.0%

SOURCE OF DATA: A1 Enrollments

Illinois Community College Board

Table B-5

ANNUAL UNDUPLICATED ENROLLMENT IN
AGRICULTURAL AND FOOD PRODUCTS PROCESSING OPERATIONS/MGMT
CIP 010401

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
537	Richland	0	5	4	2	3	--	50.0%
	Total	0	5	4	2	3	--	50.0%

SOURCE OF DATA: A1 Enrollments

Illinois Community College Board

Table B-6

ANNUAL UNDUPLICATED ENROLLMENT IN
AGRICULTURAL SUPPLIES, RETAILING & WHOLESALING
CIP 010501

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
513	Illinois Valley	1	3	3	6	5	400.0%	-16.7%
528	McHenry*	0	1	1	0	0	--	--
505	Parkland*	3	1	0	0	0	-100.0%	--
537	Richland	0	0	8	7	3	--	-57.1%
518	Sandburg*	2	1	2	0	5	150.0%	--
534	Spoon River	0	0	0	0	0	--	--
	Total	6	6	14	13	13	116.7%	0.0%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Enrollments

Illinois Community College Board

Table B-7

ANNUAL UNDUPLICATED ENROLLMENT IN
EQUESTRIAN/EQUINE STUDIES, HORSE MGMT & TRAINING
CIP 010507

010507 - Enrollments

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
503	Black Hawk	18	28	42	43	53	194.4%	23.3%
	Total	18	28	42	43	53	194.4%	23.3%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-1

ANNUAL DUPLICATED COMPLETERS IN
AGRICULTURAL BUSINESS & MANAGEMENT, GENERAL
CIP 010101

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
522	Belleville*	0	0	0	0	0	--	--
503	Black Hawk	4	2	8	8	13	225.0%	62.5%
507	Danville	2	1	2	2	1	-50.0%	-50.0%
519	Highland	1	1	2	0	2	100.0%	--
514	Illinois Central	5	4	9	8	5	0.0%	-37.5%
529	Illinois Eastern	(7)	(9)	(0)	(13)	(14)	(100.0%)	(7.7%)
	Wabash Valley	7	9	13	13	14	100.0%	7.7%
525	Joliet	11	8	11	19	12	9.1%	-36.8%
520	Kankakee	2	2	0	2	3	50.0%	50.0%
501	Kaskaskia	6	7	9	5	8	33.3%	60.0%
523	Kishwaukee	2	3	0	3	1	-50.0%	-66.7%
517	Lake Land	10	8	9	12	14	40.0%	16.7%
536	Lewis & Clark	1	0	1	3	0	-100.0%	-100.0%
528	McHenry*	0	0	1	0	1	--	--
505	Parkland	4	12	9	8	14	250.0%	75.0%
521	Rend Lake	11	6	5	5	6	-45.5%	20.0%
537	Richland*	0	0	0	0	0	--	--
531	Shawnee	0	1	1	1	1	--	--
539	Wood	4	6	5	7	8	100.0%	14.3%
	Total	70	70	85	96	103	47.1%	7.3%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-2

ANNUAL DUPLICATED COMPLETERS
IN AGRICULTURAL PRODUCTION WORKERS & MANAGERS, GENERAL
CIP 010301

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
503	Black Hawk	11	5	14	17	7	-36.4%	-58.8%
519	Highland	4	2	3	3	1	-75.0%	-66.7%
529	Illinois Eastern	(13)	(9)	(6)	(5)	(13)	(0.0%)	(160.0%)
	Wabash Valley	13	9	6	5	13	0.0%	160.0%
513	Illinois Valley	0	2	5	3	3	--	0.0%
525	Joliet	26	22	22	23	1	-96.2%	-95.7%
520	Kankakee	0	0	0	0	0	--	--
501	Kaskaskia*	0	0	0	0	0	--	--
523	Kishwaukee	2	2	1	3	0	-100.0%	-100.0%
517	Lake Land	14	11	11	3	10	-28.6%	233.3%
536	Lewis & Clark*	0	0	0	0	0	--	--
526	Lincoln Land	5	6	7	8	4	-20.0%	-50.0%
521	Rend Lake	1	5	6	3	3	200.0%	0.0%
518	Sandburg	1	4	2	2	2	100.0%	0.0%
531	Shawnee	0	0	0	0	0	--	--
534	Spoon River	6	4	9	6	5	-16.7%	-16.7%
539	Wood	0	1	0	1	0	--	-100.0%
	Total	83	73	86	77	49	-41.0%	-36.4%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-3

ANNUAL DUPLICATED COMPLETERS
IN AGRICULTURAL ANIMAL HUSBANDRY & PRODUCTION MANAGEMENT
CIP 010302

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
503	Black Hawk	15	18	29	33	28	86.7%	-15.2%
525	Joliet	2	8	6	0	0	-100.0%	--
523	Kishwaukee	1	0	2	2	1	0.0%	-50.0%
517	Lake Land	0	1	0	0	1	--	--
505	Parkland	0	7	8	4	4	--	0.0%
539	Wood	7	2	0	6	14	100.0%	133.3%
	Total	25	36	45	45	48	92.0%	6.7%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-4

ANNUAL DUPLICATED COMPLETERS
IN CROP PRODUCTION OPERATIONS & MANAGEMENT
CIP 010304

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
517	Lake Land	0	0	0	1	0	--	-100.0%
	Total	0	0	0	1	0	--	-100.0%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-5

ANNUAL DUPLICATED COMPLETERS IN
AGRICULTURAL AND FOOD PRODUCTS PROCESSING OPERATIONS/MGMT
CIP 010401

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
537	Richland	0	0	0	0	0	–	–
	Total	0	0	0	0	0	–	–

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-6

ANNUAL DUPLICATED COMPLETERS IN
AGRICULTURAL SUPPLIES, RETAILING & WHOLESALING
CIP 010501

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
513	Illinois Valley	0	0	0	2	3	–	50.0%
528	McHenry*	0	1	0	0	0	–	–
505	Parkland*	0	1	0	0	0	–	–
537	Richland	0	0	0	0	1	–	–
518	Sandburg*	1	1	0	0	5	400.0%	–
534	Spoon River	0	0	0	0	0	–	–
	Total	1	3	0	2	9	800.0%	350.0%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table C-7

ANNUAL DUPLICATED COMPLETERS
IN EQUESTRIAN/EQUINE STUDIES, HORSE MGMT & TRAINING
CIP 010507

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
503	Black Hawk	8	2	10	14	6	-25.0%	-57.1%
	Total	8	2	10	14	6	-25.0%	-57.1%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-1

ANNUAL UNDUPLICATED ENROLLMENT IN
HORTICULTURE SERVICES OPERATIONS & MGMT. GENERAL
CIP 010601

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
522	Belleville	93	110	120	122	108	16.1%	-11.5%
503	Black Hawk	26	26	31	29	35	34.6%	20.7%
508	Chicago	(0)	(0)	(1)	(1)	(0)	(--)	(-100.0%)
	Washington*	0	0	1	1	0	--	-100.0%
502	DuPage	157	164	200	181	217	38.2%	19.9%
512	Harper	38	47	57	52	54	42.1%	3.8%
514	Illinois Central	76	89	90	101	96	26.3%	-5.0%
529	Illinois Eastern	(0)	(41)	(29)	(35)	(51)	(--)	(--)
	Lincoln Trail	0	41	29	35	51	--	45.7%
525	Joliet	184	201	191	180	197	7.1%	9.4%
501	Kaskaskia	42	40	42	30	25	-40.5%	-16.7%
523	Kishwaukee	28	41	30	20	16	-42.9%	-20.0%
532	Lake County*	37	37	17	3	4	-89.2%	33.3%
517	Lake Land	0	0	0	0	0	--	--
528	McHenry	46	38	41	62	63	37.0%	1.6%
521	Rend Lake	0	0	0	28	21	--	-25.0%
537	Richland	25	51	47	62	43	72.0%	-30.6%
506	Sauk Valley*	19	27	12	0	0	-100.0%	--
531	Shawnee*	1	2	3	4	1	0.0%	-75.0%
533	Southeastern	45	66	63	43	42	-6.7%	-2.3%
534	Spoon River	21	40	39	9	0	-100.0%	-100.0%
601	State Community	38	2	1	0	10	-73.7%	--
539	Wood*	51	47	20	0	0	-100.0%	--
	Total	927	1069	1034	962	983	6.0%	2.2%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-2

ANNUAL UNDUPLICATED ENROLLMENT IN
ABORICULTURE
CIP 010602

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
512	Harper	0	0	0	0	1	–	–
523	Kishwaukee*	1	0	0	1	0	-100.0%	-100.0%
532	Lake County	4	3	20	11	13	225.0%	18.2%
533	Southeastern	0	0	1	1	1	–	0.0%
	Total	5	3	21	13	15	200.0%	15.4%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-3

ANNUAL UNDUPLICATED ENROLLMENT IN
ORNAMENTAL HORTICULTURE OPERATIONS & MGMT
CIP 010603

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
508	Chicago	(0)	(0)	(0)	(0)	(0)	(–)	(–)
	Washington	0	0	0	0	0	–	–
507	Danville	20	17	20	23	34	70.0%	47.8%
502	DuPage	16	20	19	11	34	112.5%	209.1%
512	Harper	0	0	0	0	3	–	–
525	Joliet	8	45	23	23	16	100.0%	-30.4%
523	Kishwaukee	4	12	9	7	16	300.0%	128.6%
532	Lake County	65	44	39	33	32	-50.8%	-3.0%
528	McHenry	31	19	19	33	41	32.3%	24.2%
	Total	144	157	129	130	176	22.2%	35.4%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-4

ANNUAL UNDUPLICATED ENROLLMENT IN
GREENHOUSE OPERATIONS & MANAGEMENT
CIP 010604

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
502	DuPage	5	3	10	8	14	180.0%	75.0%
512	Harper	0	0	0	0	0	–	–
525	Joliet	1	10	7	7	4	300.0%	-42.9%
523	Kishwaukee	9	13	14	16	15	66.7%	-6.3%
531	Shawnee*	1	1	2	0	0	-100.0%	–
533	Southeastern	0	0	0	1	1	–	0.0%
504	Triton	41	33	28	29	32	-22.0%	10.3%
	Total	57	60	61	61	66	15.8%	8.2%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-5

ANNUAL UNDUPLICATED ENROLLMENT IN
LANDSCAPING OPERATIONS & MANAGEMENT
CIP 010605

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
507	Danville	33	35	37	38	42	27.3%	10.5%
502	DuPage	20	31	31	37	12	-40.0%	-67.6%
512	Harper	0	0	0	2	4	–	100.0%
514	Illinois Central	9	16	10	14	6	-33.3%	-57.1%
513	Illinois Valley*	40	5	0	0	0	-100.0%	–
525	Joliet	2	8	7	5	6	200.0%	20.0%
523	Kishwaukee	36	30	31	30	32	-11.1%	6.7%
532	Lake County	54	40	80	104	107	98.1%	2.9%
526	Lincoln Land	32	38	4	0	0	-100.0%	–
528	McHenry	4	5	13	25	18	350.0%	-28.0%
504	Triton	42	44	37	46	38	-9.5%	-17.4%
506	Sauk Valley*	0	0	0	0	0	–	–
533	Southeastern	0	0	0	0	0	–	–
	Total	272	252	250	301	265	-2.6%	-12.0%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

BEST COPY AVAILABLE

Illinois Community College Board

Table D-6

ANNUAL UNDUPLICATED ENROLLMENT IN
NURSERY OPERATION & MANAGEMENT
CIP 010606

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
502	DuPage	0	0	1	1	7	–	600.0%
512	Harper	0	0	1	0	0	–	–
525	Joliet	1	2	1	2	1	0.0%	-50.0%
523	Kishwaukee	0	1	7	3	0	–	-100.0%
531	Shawnee	0	0	0	2	0	–	-100.0%
533	Southeastern	0	0	0	0	0	–	–
	Total	1	3	10	8	8	700.0%	0.0%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-7

ANNUAL UNDUPLICATED ENROLLMENT IN
TURF MANAGEMENT
CIP 010607

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
502	DuPage	1	2	2	5	9	800.0%	80.0%
512	Harper	0	0	0	0	0	–	–
514	Illinois Central	6	6	4	2	6	0.0%	200.0%
525	Joliet	0	3	2	0	0	—	–
523	Kishwaukee*	9	22	22	33	47	422.2%	42.4%
532	Lake County	26	17	24	21	17	-34.6%	-19.0%
536	Lewis & Clark	0	0	2	11	15	–	36.4%
533	Southeastern	0	0	0	0	0	–	–
	Total	42	50	56	72	94	123.8%	30.6%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table D-8

ANNUAL UNDUPLICATED ENROLLMENT IN
PARK & GROUNDS MANAGEMENT
CIP 010610

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
512	Harper	21	13	13	19	23	9.5%	21.1%
529	Illinois Eastern	(12)	(10)	(10)	(2)	(0)	(-100.0%)	(-100.0%)
	Wabash Valley*	12	10	10	2	0	-100.0%	-100.0%
531	Shawnee*	2	1	2	1	0	-100.0%	-100.0%
	Total	35	24	25	22	23	-34.3%	4.5%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-1

ANNUAL DUPLICATED COMPLETERS
IN HORTICULTURE SERVICES OPERATIONS & MGMT, GENERAL
CIP 010601

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
522	Belleville	4	9	9	13	16	300.0%	23.1%
503	Black Hawk	8	10	9	12	9	12.5%	-25.0%
508	Chicago	(0)	(0)	(0)	(0)	(0)	(--)	(--)
	Washington*	0	0	0	0	0	--	--
502	DuPage	18	16	18	11	12	-33.3%	9.1%
512	Harper	5	4	8	8	8	60.0%	0.0%
514	Illinois Central	11	13	9	12	23	109.1%	91.7%
529	Illinois Eastern	(0)	(0)	(0)	(0)	(4)	(--)	(--)
	Lincoln Trail	0	0	0	0	4	--	--
525	Joliet	17	15	24	18	32	88.2%	77.8%
501	Kaskaskia	8	12	17	12	6	-25.0%	-50.0%
523	Kishwaukee	4	1	4	0	2	-50.0%	--
532	Lake County*	1	0	0	0	0	-100.0%	--
517	Lake Land	0	0	0	0	0	--	--
528	McHenry	1	6	3	6	5	400.0%	-16.7%
521	Rend Lake	0	0	0	3	10	--	233.3%
537	Richland	2	4	3	7	5	150.0%	-28.6%
506	Sauk Valley*	11	7	12	0	0	-100.0%	--
531	Shawnee*	0	0	0	0	0	--	--
533	Southeastern	4	17	11	18	11	175.0%	-38.9%
534	Spoon River	1	9	15	3	0	-100.0%	-100.0%
601	State Comm Coll	0	0	0	0	0	--	--
539	Wood*	1	8	2	1	0	-100.0%	-100.0%
	Total	96	131	144	124	143	49.0%	15.3%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-2

ANNUAL DUPLICATED COMPLETERS IN
ARBORICULTURE
CIP 010602

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
512	Harper	0	0	1	0	1	--	--
523	Kishwaukee*	1	1	0	0	0	-100.0%	--
532	Lake County	3	0	5	1	3	0.0%	200.0%
533	Southeastern	0	0	0	1	1	--	0.0%
	Total	4	1	6	2	5	25.0%	150.0%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-3

ANNUAL DUPLICATED COMPLETERS
IN ORNAMENTAL HORTICULTURE OPERATIONS & MGMT
CIP 010603

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
508	Chicago	(0)	(0)	(0)	(0)	(0)	(--)	(--)
	Washington	0	0	0	0	0	--	--
507	Danville	11	2	1	1	8	-27.3%	700.0%
502	DuPage	2	5	0	4	6	200.0%	50.0%
512	Harper	0	0	0	2	13	--	550.0%
525	Joliet	5	2	7	4	6	20.0%	50.0%
523	Kishwaukee	0	2	3	4	6	--	50.0%
532	Lake County	6	5	0	4	5	-16.7%	25.0%
528	McHenry	7	4	2	2	5	-28.6%	150.0%
	Total	31	20	13	21	49	58.1%	133.3%

SOURCE OF DATA: A1 Submission

BEST COPY AVAILABLE

Illinois Community College Board

Table E-4

ANNUAL DUPLICATED COMPLETERS
IN GREENHOUSE OPERATIONS & MANAGEMENT
CIP 010604

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
502	DuPage	0	1	0	3	1	--	-66.7%
512	Harper	0	0	0	0	0	--	--
525	Joliet	2	0	0	0	3	50.0%	--
523	Kishwaukee	3	4	4	5	7	133.3%	40.0%
506	Sauk Valley*	14	6	2	0	0	-100.0%	--
531	Shawnee*	0	0	0	0	0	--	--
533	Southeastern	0	5	10	15	24	--	60.0%
504	Triton	2	0	1	1	2	0.0%	100.0%
	Total	21	16	17	24	37	76.2%	54.2%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-5

ANNUAL DUPLICATED COMPLETERS
IN LANDSCAPING OPERATIONS & MANAGEMENT
CIP 010605

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
507	Danville	5	7	6	8	13	160.0%	62.5%
502	DuPage	1	1	4	2	0	-100.0%	-100.0%
512	Harper	0	0	0	2	4	--	100.0%
514	Illinois Central	3	1	2	1	1	-66.7%	0.0%
513	Illinois Valley*	9	0	0	0	0	-100.0%	--
525	Joliet	5	5	3	0	0	-100.0%	--
523	Kishwaukee	12	8	7	6	7	-41.7%	16.7%
532	Lake County	7	7	4	12	11	57.1%	-8.3%
526	Lincoln Land	4	6	4	2	1	-75.0%	-50.0%
528	McHenry	0	1	0	1	1	--	0.0%
506	Sauk Valley*	8	6	1	0	0	-100.0%	--
533	Southeastern	0	0	1	0	8	--	--
504	Triton	9	5	6	4	9	0.0%	125.0%
	Total	63	47	38	38	55	-12.7%	44.7%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-6

ANNUAL DUPLICATED COMPLETERS
IN NURSERY OPERATION & MANAGEMENT
CIP 010606

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
502	DuPage	0	0	0	0	1	--	--
512	Harper	0	0	0	0	0	--	--
525	Joliet	0	0	0	0	4	--	--
523	Kishwaukee	0	3	6	4	2	--	-50.0%
531	Shawnee	0	0	0	0	0	--	--
533	Southeastern	0	0	0	0	0	--	--
	Total	0	3	6	4	7	--	75.0%

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-7

ANNUAL DUPLICATED COMPLETERS
IN TURF MANAGEMENT
CIP 010607

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
502	DuPage	0	1	3	1	0	--	-100.0%
512	Harper	0	0	2	0	1	--	--
514	Illinois Central	1	0	0	0	0	-100.0%	--
525	Joliet	4	1	3	0	0	-100.0%	--
523	Kishwaukee*	3	1	9	3	9	200.0%	200.0%
532	Lake County	2	4	2	3	1	-50.0%	-66.7%
536	Lewis & Clark	0	0	0	0	0	--	--
533	Southeastern	0	0	0	0	0	--	--
	Total	10	7	19	7	11	10.0%	57.1%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

Illinois Community College Board

Table E-8

ANNUAL DUPLICATED COMPLETERS
IN PARK & GROUNDS MANAGEMENT
CIP 010610

Dist No	District/College	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	1991-1995 % Change	1994-1995 % Change
512	Harper	3	3	2	0	6	100.0%	--
529	Illinois Eastern	(3)	(3)	(2)	(2)	(1)	(-66.7%)	(-50.0%)
	Wabash Valley*	3	3	2	2	1	-66.7%	-50.0%
531	Shawnee*	0	0	0	0	0	--	--
	Total	6	6	4	2	7	16.7%	250.0%

*College has inactivated or withdrawn program but still reports enrollments and completions as program is being phased out.

SOURCE OF DATA: A1 Submission

AGRICULTURE

Baccalaureate degree programs in agriculture may include various specialties, such as agricultural economics, agribusiness, agricultural sciences (animal science, crop or plant science, soil science, and horticulture), agricultural mechanics, and agriculture education. The recommendation below applies to programs in all of these fields. To transfer into a baccalaureate degree program in agriculture as a junior, students need to complete a minimum of 60 semester credits. Community and junior college students are strongly encouraged to complete an Associate in Science degree prior to transfer. Since admission is competitive, however, completion of the recommended courses alone does not guarantee admission. Students should select courses in consultation with an agriculture adviser.

Many community colleges also offer specialized Associate in Applied Science degree programs in agriculture, some of which will also transfer to specific universities through 2+2 or capstone agreements.

General Education Core Courses[1] — **38-41 semester credits**

- Communication — 9 semester credits
- Mathematics — 3-6 semester credits
  - *Since agriculture specialty requirements differ, select at least one course in consultation with an agriculture adviser from:*
    - Calculus
    - Finite Mathematics
    - General Education Statistics
- Physical and Life Sciences — 8 semester credits
  - *Select at least one course in life science and one in physical science in consultation with an agriculture adviser from the following:*
    - General Biology I with Laboratory (4 semester credits)
    - General (Inorganic) Chemistry I with Laboratory (4 semester credits)
    - General Physics I with Laboratory (4 semester credits)
- Humanities and Fine Arts — 9 semester credits
- Social and Behavioral Sciences — 9 semester credits

[1] *General education courses are described in the Illinois General Education Core Curriculum.*

Recommended Prerequisite — **0-3 semester credits**

- Computer Literacy (0-3 semester credits)
  - *Students should be able to use wordprocessing, database, and spreadsheet software; to access the Internet; and to negotiate an operating system such as OS/2, DOS, or WINDOWS.*

Agriculture Core Courses — **12-16 semester credits**

Select four of the following depending upon planned agriculture specialty (see specialties below):

- Introduction to Agricultural Economics (3-4 semester credits)
- Introduction to Animal Science (3-4 semester credits)
- Introduction to Crop or Plant Science (4 semester credits)
- Introduction to Soil Science (4 semester credits)
- Introduction to Horticulture (3 semester credits)
- Introduction to Agricultural Mechanization (3-4 semester credits)

Other Agriculture Articulated Courses

- Introduction to Agriculture Education (2-3 semester credits)
- Introduction to Floral Design (2-3 semester credits)
- Introductory Microcomputer Skills in Agriculture (3 semester credits)

BEST COPY AVAILABLE

Recommended Courses for Various Agriculture Specialties

Agricultural Economics and Agribusiness — 18-21 semester credits
- Introduction to Agricultural Economics and/or Microeconomics[2] (3-4 semester credits)
- Macroeconomics[2] (3 semester credits)
- One to two courses in accounting (3-8 semester credits)
- Select three additional agriculture core courses in consultation with an agriculture adviser
- Additional courses in mathematics (see General Education mathematics courses above)

[2]Can be used also to fulfill General Education Core Requirements in the Social and Behavioral Sciences.

Animal Science — 18-20 semester credits
- Introduction to Animal Science (3-4 semester credits)
- Select three additional agriculture core courses in consultation with an agriculture adviser
- General (Organic) Chemistry II with Laboratory (and/or General Biology II with Laboratory)

Crop or Plant Science and Soil Science — 18-20 semester credits
- Introduction to Crop or Plant Science (4 semester credits)
- Introduction to Soil Science (4 semester credits)
- Select two additional agriculture core courses in consultation with an agriculture adviser
- General (Organic) Chemistry II with Laboratory (and/or General Biology II with Laboratory)

Horticulture — 17-19 semester credits
- Introduction to Agricultural Economics (3-4 semester credits)
- Introduction to Horticulture (3 semester credits)
- Introduction to Soil Science (4 semester credits)
- Introduction to Agricultural Mechanization (3-4 semester credits)
- General Biology II with Laboratory and/or General (Organic) Chemistry II with Laboratory

Agricultural Mechanics — 17-20 semester credits
- Introduction to Agricultural Mechanization (3-4 semester credits)
- Introduction to Crop or Plant Science (4 semester credits)
- Select two additional agriculture core courses in consultation with an agriculture adviser
- General Physics I with Laboratory (4 semester credits)

Agriculture Education — 15-19 semester credits
- Introduction to Agricultural Economics (3-4 semester credits)
- Introduction to Animal Science (3-4 semester credits)
- Introduction to Crop or Plant Science (4 semester credits)
- Introduction to Agricultural Mechanization (3-4 semester credits)
- Introduction to Agriculture Education (2-3 semester credits)

Agriculture Course Descriptions

INTRODUCTION TO AGRICULTURAL ECONOMICS (3-4 semester credits): The application of the principles of economics to agricultural problems and the role of agriculture in the U.S. and world economies. Includes production principles; production costs, supply, and revenue; profit maximization; consumption and demand; price elasticity; market price determination; and competitive versus non-competitive market models. Examination of the world food situation, including population growth, world food production trends, trade in agricultural products, and agriculture's role in economic growth; agriculture characteristics and inputs (natural, human, and capital); the marketing of agricultural products (functional and institutional commodity approaches to marketing, marketing costs, and the operation of the futures market); and agricultural problems and policies (program goals, price and income, and resource use).

INTRODUCTION TO ANIMAL SCIENCE (3-4 semester credits): The application of the sciences of genetics, physiology, and nutrition to the improvement of the animal industries and an introduction to management and production practices. Includes animal breeds, breeding and selection; anatomy physiology, and nutrition and growth; environment, health, and sanitation; products and marketing; production technology and economics; animal behavior; and current issues in animal science.

INTRODUCTION TO CROP OR PLANT SCIENCE (4 semester credits): The basic principles of plant growth, including human and environmental influences and the theoretical and practical application of agronomic principles to crop production. Includes the historical and economic importance of crop plants for food, feed, and fiber; origin, classification, and geographic distribution of field crops; environmental factors and agronomic problems; crop plant breeding, growth, development, and physiology; cropping systems and practices; seedbed preparation, tillage, and crop establishment; pests and controls; and harvesting, storing, and marketing practices.

INTRODUCTION TO SOIL SCIENCE (4 semester credits): An introduction to the chemical, physical, and biological properties of soils; the origin, classification, and distribution of soils and their influence on people and food production; the management and conservation of soils; and the environmental impact of soil use.

INTRODUCTION TO HORTICULTURE (3 semester credits): An introduction to the principles and practices in the development, production, and use of horticultural crops (fruits, vegetables, greenhouse, turf, nursery, floral, and landscape). Includes the classification, structure, growth and development, and environmental influences on horticultural plants; horticultural technology; and an introduction to the horticultural industry.

INTRODUCTION TO AGRICULTURAL MECHANIZATION (3-4 semester credits): An introduction to agricultural power and machinery (engines, power transmission including hydraulics, tillage machinery, calibrations, and harvesting equipment), agricultural electrification and applications (circuits, motors, controls, and materials handling and processing), agricultural structures (sketches and drawings, loads, construction materials, and layout and design), and soil and water conservation (surveying, mapping, drainage, and conservation structures).

INTRODUCTION TO AGRICULTURE EDUCATION (2-3 semester credits): An introduction to the philosophy of education, in general, and vocational education, specifically; the history of and current issues in agriculture education; the nature of the educative process; the characteristics, duties, and responsibilities of successful teachers; the components of an agriculture program; the role of professional organizations in agriculture education; state teacher certification requirements; and student differences and special needs. Includes directed observation of agriculture teachers in school classrooms.

INTRODUCTION TO FLORAL DESIGN (2-3 semester credits): An introduction to the principles of design applied to floral arrangements, including color, forms and lines, balance, types of floral arrangements, floral materials and accessories, and production techniques.

INTRODUCTORY MICROCOMPUTER SKILLS IN AGRICULTURE (3 semester credits): Introduction to computer hardware, disk operating systems, file manipulation, and printers and the use of word processing, graphics, spreadsheet, and database management software. Also includes solution of agriculture data-related problems and use of prepared software and templates.

BEST COPY AVAILABLE

AGRICULTURE PANEL

Public Universities

Patrick O'Rourke, Illinois State University, CO-CHAIR
Robert Arthur, Southern Illinois University at Carbondale
Wayne L. Banwart, University of Illinois at Urbana-Champaign
Danny Terry, Western Illinois University

Community Colleges

Gary Pheiffer, Black Hawk College
William Johnson, Joliet Junior College
Ron Heisner, Kishwaukee College, CO-CHAIR
Curt Rincker, Lake Land College
Kent Sickmeyer, Rend Land College

Consultant

William Schreck, State Board of Education

Transfer Coordinators

Carolyn Bartlett, Illinois State University
Dennis Nord, Illinois Valley Community College

Staff

Ann Bragg, BHE
Preston Morgan, ICCB